Iowa Department of Transportation

**MINUTES**
**OF**
**IOWA DOT SPECIFICATION COMMITTEE MEETING**

**November 14, 2013**

| | | |
|---|---|---|
| **Members Present:** | Darwin Bishop | District 3 - Construction |
| | Mark Brandl | District 6 - Davenport RCE |
| | Donna Buchwald | Office of Local Systems |
| | Eric Johnsen, Secretary | Specifications Section |
| | Greg Mulder | Office of Construction & Materials |
| | Gary Novey | Office of Bridges & Structures |
| | Dan Redmond | District 4 - Materials |
| | Tom Reis, Chair | Specifications Section |
| | Brian Smith | Office of Design |
| | Willy Sorensen | Office of Traffic & Safety |
| **Members Not Present:** | Mitch Dillavou | Project Delivery Bureau |
| | Wes Musgrove | Office of Contracts |
| **Advisory Members Present:** | Lisa McDaniel | FHWA |
| **Others Present:** | Mike Heller | Office of Design |
| | Ed Kasper | Office of Contracts |
| | Kevin Merryman | Office of Construction & Materials |
| | Melissa Serio | Office of Construction & Materials |
| | Wayne Sunday | Office of Construction & Materials |
| | Matthew Trainum | Office of Design |

Tom Reis, Specifications Engineer, opened the meeting. The following items were discussed in accordance with the agenda dated November 8, 2013:

**1. Article 1102.01, Competency and Qualification of Bidders.**
**Article 1102.02, Reduction in Bidder Qualification Restrictions.**

The Office of Contracts requested to clarify who prequalifies bidders.

**2. Article 1102.09, A, Preparation of Proposals.**

The Office of Contracts requested to better define required documents for submitting a paper bid and to match current practice.

**3. Article 1107.08, Public Convenience and Safety.**

The Specifications Section requested to define when mainline lanes can be opened adjacent to paved shoulder construction.

**4. Article 2001.01, General (General Equipment Requirements).**

The Office of Construction and Materials requested to ban the use of aluminum products in contact with concrete.

**5.** **Article 2102.04, A, 4, Special Backfill Material (Roadway and Borrow Excavation).**

The Office of Construction and Materials requested to make special backfill a plan quantity item.

**6.** **Section 2107, Embankments.**

**Section 2109, Natural Subgrade.**

**Section 2511, Removal and Construction of Sidewalks and Recreational Trails.**

The Office of Construction and Materials requested to incorporate DS-12021, 12022, and 12024 into the Standard Specifications.

**7.** **Article 2301.03, U, 1, Time for Opening Pavement for Use (Portland Cement Concrete Pavement).**

The Office of Construction and Materials requested to allow Class M pavement opening in less than 48 hours if adequate flexural strength is attained.

**8.** **Article 2403.02, B, 3, Entrained Air Content.**

The Office of Construction and Materials requested to allow a higher variation of entrained air content in structural concrete.

**9.** **Article 2433.03, Construction (Concrete Drilled Shaft).**

The Office of Construction and Materials requested to add additional criteria to the confirmation boring and sampling requirements.

**10.** **Article 2503.03, Construction (Storm Sewers).**

**Article 2504.03, K, Conflicts (Sanitary Sewers).**

**Article 2554.03, A, 7, Conflicts (Water Mains, Valves, Fire Hydrants, and Appurtenances).**

The Specifications Section requested changes to reflect Iowa DNR regulations and enforcement of sewer pipes (sanitary and storm) crossing water mains.

**11.** **Section 2507, Concrete and Stone Revetment.**

The Office of Construction and Materials and Specifications Section requested to move specifications for slope protection and bridge wing armoring into the Standard Specifications.

**12.** **Section 2526, Construction Survey.**

The Office of Construction and Materials requested to clarify survey responsibilities with regard to shots taken of existing pavement and the design of profile transitions with adjacent pavement and bridges. .

**13.** **Article 2528.03, C, Channelizing Devices (Traffic Control).**

The Office of Traffic and Safety requested to change the specified height of tubular markers.

**14.** **Article 2544.04, A, Cleaning and Filling Cracks for HMA Surfaces.**

The Specifications Section and District 2 requested to make 4 foot (or less) wide shoulders incidental to mainline crack cleaning and filling. This is consistent with the crack cleaning and sealing specifications.

**15.** **Article 2601.03, A, 11, Native Grass Seed Drill.**

The Office of Design requested to add specifications for native grass seed drills.

**16. Article 2601.03, B, 4, a, 3, Seedbed Preparation.**

The Office of Design requested to address situations where vegetation other than weeds interferes with seedbed preparation.

**17. Article 2601.03, C, 5, Native Grass Seeding.**

The Office of Design requested to modify the spring seeding date and provide a dormant seeding date for native grass seeding.

**18. Section 2602, Water Pollution Control (Soil Erosion).**

The Office of Design requested to add instructions for silt basin removal and revise the MOM and BOP.

**19. Article 4169.07, A, Straw Mulch.**

The Office of Design requested to add requirements that straw for mulch be bailed the same season the grain was harvested from the plant.

**20. Article 4169.12, Perimeter and Slope Control Devices.**

The Office of Design requested to move information currently contained in a Materials I.M. into the specifications.

**21. DS-12019, Mass Concrete - Control of Heat of Hydration.**

The Office of Construction and Materials requested revisions to the Developmental Specifications for Mass Concrete - Control of Heat of Hydration.

**22. DS-12028, Floating Silt Curtain.**

The Office of Construction and Materials requested revisions to the Developmental Specifications for Floating Silt Curtain.

**23. DS-12XXX, Contractor Furnished Borrow.**

The Office of Design requested approval of Developmental Specifications for Contractor Furnished Borrow.

**24. SS-12XXX, Project Management.**

The Specifications Section requested approval of Supplemental Specifications for Project Management.

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Wes Musgrove | **Office:** Contracts | **Item 1** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** April 2014 GS | |
| **Article No.:** 1102.01<br>**Title:** Competency and Qualification of Bidders<br>**Article No.:** 1102.02<br>**Title:** Reduction in Bidder Qualification Restrictions | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**1102.01, A.**

**Replace** the fifth sentence:

The statement shall be filed with the ~~Contracting Authority~~ Department at least 5 calendar days before the date on which proposals are to be received.

**1102.01, C.**

**Replace** the first sentence:

The ~~Contracting Authority~~ Department will compute the Contractor's maximum prequalification amount based on the following prequalification formula:

**1102.01, D.**

**Replace** the first sentence:

The ~~Contracting Authority~~ Department will qualify Contractors into three categories:

**1102.01, G.**

**Replace** the Article:

The necessary forms and instructions for furnishing the "Contractor's Financial - Experience - Equipment Statement" will be supplied by the ~~Contracting Authority~~ Department upon application.

**1102.01, H.**

**Replace** the third sentence:

Before the contract is awarded to a bidder, the bidder may be required to furnish evidence to the satisfaction of the ~~Contracting Authority~~ Department of the bidder's ability to perform and complete the contract.

**1102.02, Reduction in Bidder Qualification Restrictions.**

**Replace** the Article:

**A.** The requirements and conditions for bidder qualification as contained in Article 1102.01 may be reduced by the ~~Contracting Authority~~ Department either for contractors who have well established performance records in other fields or for contractors having adequate

financial responsibility and experienced supervisory personnel available for the work that is under consideration or for both the above reasons.

**B.** Likewise, the requirements may be modified by the ~~Contracting Authority~~ Department for newly formed or reorganized firms or corporations whose basic organization is composed of individuals who are veterans of the construction industry, with proven records of satisfactory performance in the field in which they have elected to bid, provided, however, that they have adequate financial responsibility, equipment, and available experienced supervisory personnel.

**Comments:**

**Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'.Use ~~Strikeout~~ and Highlight.**

**1102.01 COMPETENCY AND QUALIFICATION OF BIDDERS.**

**A.** Prospective bidders shall meet the Department's requirements for prequalification. To prequalify, a prospective bidder shall complete the required sections of the "Contractor's Financial - Experience - Equipment Statement" (Form 650004) and submit it to the Department. The filing of this statement does not in itself constitute qualification. A prospective bidder shall receive definite approval of this statement to be placed on the qualified list before the bidder's proposals will be considered. The statement shall be filed with the Department ~~Contracting Authority~~ at least 5 calendar days before the date on which proposals are to be received.

**B.** In order to continuously remain on the qualified list, a prospective bidder must file Form 650004 with the Department for approval once each year and at such other times as the Department may request. Unless otherwise notified, the previously approved statement will expire 18 calendar months from the date of that statement. The prospective bidder will be dropped from the qualified list if a new statement has not been filed and approved by the expiration date.

**C.** The Department ~~Contracting Authority~~ will compute the Contractor's maximum prequalification amount based on the following prequalification formula:

**MAXPREQ = [CURRENT+NONCURRENT+LL]×F**

Where:

MAXPREQ = maximum prequalification amount

CURRENT = current assets minus current liabilities

NONCURRENT = (non-current assets minus non-current liabilities)/2 if > 0

NONCURRENT = (non-current assets minus non-current liabilities) if < 0

LL = approved authorization to loan letter

F = experience factor

**D.** The Department ~~Contracting Authority~~ will qualify Contractors into three categories:

1. **Individually Prepared Statement.**
   - **a.** An Individually Prepared Statement is a "Contractor's Financial -Experience - Equipment Statement" that has been completed by the prospective bidder. If the statement has been compiled by a CPA, but does not contain a CPA review or audit of the financial portion of the statement, it is still considered an Individually Prepared Statement.
   - **b.** When an Individually Prepared Statement is submitted to the Department, the maximum prequalification amount will be $200,000.
2. **CPA Reviewed Statement.**
   - **a.** A CPA Reviewed Statement is a "Contractor's Financial -Experience - Equipment Statement" that includes a current CPA review of the financial portion of the statement. The review must be completed by a CPA who is either registered to practice in Iowa or registered in another state having reciprocal arrangements with Iowa.

**b.** When a CPA Reviewed Statement is submitted to the Department, an experience factor (F) ranging from 0.0 to 12.5, depending on the prospective bidder's past performance with projects let by the Department, will be used in the prequalification formula. A prospective bidder, who has been qualified to submit proposals with this type of statement, shall be limited to individual proposal sizes that do not exceed the lesser of $1 million or the maximum prequalification amount minus the bidder's amount of uncompleted work currently under contract. Any combination of proposals, however, may total more than $1million - as long as that total does not exceed the maximum prequalification amount minus the currently uncompleted work.

**3. CPA Audited Statement.**

**a.** A CPA Audited Statement is a "Contractor's Financial - Experience - Equipment Statement" that includes a current CPA audit of the financial portion of the statement. The audit must be completed by a CPA who is either registered to practice in Iowa or registered in another state having reciprocal arrangements with Iowa.

**b.** When a CPA Audited Statement is submitted to the Department, an experience factor (F) ranging from 0.0 to 12.5, depending on the prospective bidder's past performance with projects let by the Department, will be used in the prequalification formula. A prospective bidder, who has been qualified to submit proposals with this type of statement, shall be limited to work that does not exceed the maximum prequalification amount minus the bidder's amount of uncompleted work currently under contract. However, a prospective bidder shall be considered to have an "Unlimited" bidding capacity with the Department if they were awarded over $50 million of work (including that from other Contracting Authorities) during their past fiscal year and have a prequalification limit, by the formula, over $100 million.

**E.** A prospective bidder must complete contract work in the following categories in excess of the quantities listed below before qualification to submit proposals or receive awards for projects involving larger quantities than those listed. The contract work may be done as a contractor or subcontractor. All such completed contract work will be combined into one total for each category to determine the bidder's qualifications.

| | | |
|---|---|---|
| PCC Pavement | Square Yards (Square Meters) | 100,000 (100,000) |
| Grading | Cubic Yards (Cubic Meters) | 500,000 (400,000) |
| Bituminous Pavement | Tons (Megagrams) | 50,000 (50,000) |
| Bridges | $200,000 | |
| Culverts | $100,000 | |
| Other classes of work | No Fixed Maximum | |

**F.** In all cases a bidder will be restricted to a specific dollar volume of contracts within reasonable limits of the bidder's ability to properly finance, equip, and perform the work within the specified contract period.

**G.** The necessary forms and instructions for furnishing the "Contractor's Financial - Experience - Equipment Statement" will be supplied by the Department ~~Contracting Authority~~ upon application.

**H.** For proposals involving only the furnishing of materials, granular surfacing, lighting, buildings, asbestos removal, salvage and removal, wells, traffic signals, pavement marking, or mowing, the following shall apply in lieu of the above requirements of this article:

Bidders submitting proposals must be recognized contractors engaged in the class of work provided for in the contract documents, and must possess all necessary licenses, certificates and resources to complete the work. Before the contract is awarded to a bidder, the bidder may be required to furnish evidence to the satisfaction of the Department ~~Contracting Authority~~ of the bidder's ability to perform and complete the contract.

**1102.02 REDUCTION IN BIDDER QUALIFICATION RESTRICTIONS.**

**A.** The requirements and conditions for bidder qualification as contained in Article 1102.01 may be reduced by the Department ~~Contracting Authority~~ either for contractors who have well established performance records in other fields or for contractors having adequate financial responsibility and experienced

supervisory personnel available for the work that is under consideration or for both the above reasons.

**B.** Likewise, the requirements may be modified by the Department ~~Contracting Authority~~ for newly formed or reorganized firms or corporations whose basic organization is composed of individuals who are veterans of the construction industry, with proven records of satisfactory performance in the field in which they have elected to bid, provided, however, that they have adequate financial responsibility, equipment, and available experienced supervisory personnel.

**Reason for Revision:** The existing language uses both "Contracting Authority" and "Department". This change makes the use of "Department" uniform throughout the article. This is important because the Department also lets contracts where local agencies are the Contracting Authority. Regardless of who is the contracting authority, the Department or a local agency, Iowa Code Section 314.1 (1) provides that the Department has ultimate authority to prequalify bidders.

This was initially considered as part of Item #1 from the October 2013 Specification Committee Meeting. The change of "contracting authority" to "Department" was deferred at that time to make a more comprehensive review of the spec article and make necessary changes throughout, instead of just one location as originally proposed.

| **County or City Input Needed (X one)** | **Yes** | **No** x |
|---|---|---|

**Comments:** Local agencies should address this when using the Standard Specifications on locally let contracts; however, other proposal and bidding requirements elsewhere in the Standard Specifications also need to be addressed in that situation.

| **Industry Input Needed (X one)** | | | **Yes** | **No** | |
|---|---|---|---|---|---|
| **Industry Notified:** | **Yes** | **No** x | **Industry Concurrence:** | **Yes** | **No** x |

**Comments:**

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Wes Musgrove / Ed Kasper | **Office:** Contracts | **Item 2** |
| **Submittal Date:** 04 Nov 2013 | **Proposed Effective Date:** April 2014 GS | |
| **Article No.:** 1102.09, A<br>**Title:** Preparation of Proposals | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**1102.09, A.**

**Replace** the second sentence of the second paragraph:

When prequalification is waived per Article 1102.01, H, or elsewhere in the contract documents, bidder may submit the ~~signed proposal~~ schedule of prices from the estimating proposal and the signed original bidding document on the ~~original~~ forms furnished by the ~~Contracting Authority~~ Department, in lieu of submitting an electronic bid.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**1102.09 PREPARATION OF PROPOSALS.**

**A.** Only contractors who have been authorized to bid a proposal may submit a bid for a contract.

Unless otherwise specified, bidder shall submit an electronic bid with digital signature using bidding software furnished by the Department and electronic bid submittal procedures of the Department. When prequalification is waived per Article 1102.01, H, or elsewhere in the contract documents, bidder may submit the schedule of prices from the estimating proposal and the signed original bidding document all ~~signed proposal~~ on the ~~original~~ forms furnished by the ~~Contracting Authority~~ Department, in lieu of submitting an electronic bid.

**Reason for Revision:** This change was deferred at the October 2013 Specification Committee meeting to evaluate how it impacted the use of the book on locally let contracts.

Changes apply to only paper bids which impact a very limited number of proposals. They are needed to better define required documents for submitting a paper bid and to match current practice. The documents are provided by the Department, not necessarily the contracting authority. "Original" proposals are no longer provided; they are all provided in electronic format. The bidding document is still provided as an original from the Department to help ensure that only authorized bidders submit a bid.

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| **County or City Input Needed (X one)** | **Yes** | **No** x |

**Comments:** Local agencies should address this when using the Standard Specifications on locally let contracts; however, other proposal and bidding requirements elsewhere in the Standard Specifications also need to be addressed in that situation.

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| **Industry Input Needed (X one)** | | | **Yes** | **No** x | |
| **Industry Notified:** | **Yes** | **No** x | **Industry Concurrence:** | **Yes** | **No** |

**Comments:**

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Tom Reis / Eric Johnsen | **Office:** Specifications Section | **Item 3** |
| **Submittal Date:** 10/17/2013 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 1107.08<br>**Title:** Public Convenience and Safety | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** A committee member was concerned with opening the lane adjacent to fresh PCC shoulders in as little as 1 hour if the shoulder will support the traffic control devices. The Office of Construction and Materials indicated that during most of the construction season, the pavement would be damaged, but would support a vehicle within a few hours. This is similar to patching on the interstate next to an open lane of traffic.

**Specification Section Recommended Text:**

**1107.08, Public Convenience and Safety.**

**Renumber** Article M to Article N.

**Add** the Article:

**M.** Paved shoulder construction adjacent to existing travel lanes shall meet the following:

**1. HMA Shoulder.**

- Drop-offs greater than 2 inches (50 mm) will not be allowed when the adjacent lane is open to traffic,
- Place the final lift of HMA shoulder material within 48 hours of the previous lift.

**2. PCC Shoulder.**

Do not open adjacent lane until PCC shoulder is cured enough to support traffic control devices.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**Reason for Revision:** To cover the increasing number of projects where we are doing shoulder strengthening on interstate projects where a daytime lane closure is not permitted. This is being handled by plan note at the current time.

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| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |

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| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Greg Mulder / Mahbub Khoda | **Office:** Construction and Materials | **Item 4** |
| **Submittal Date:** 2013.11.05 | **Proposed Effective Date:** | |
| **Article No.:** 2001.01<br>**Title:** General Equipment Requirements | **Other:** | |

**Specification Committee Action:** Approved with changes.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:**

**2001.01, General.**

**Add** the Article:

**E.** Do not mix, transport, or place concrete using equipment or forms with aluminum that will come in contract with the concrete.

**Comments:** The District 6 Office requested to add forms to the language so that it is clear that aluminum forms cannot be used. The Office of Construction and Materials requested to add "that will come in contact with the concrete" since that is the issue and not other parts of the equipment.

**Specification Section Recommended Text:**

**2001.01, General.**

**Add** the Article:

E. Do not mix, transport, or place concrete using equipment with aluminum or aluminum parts.

**Comments:**

**Member's Requested Change (Redline/Strikeout):**

2201.01 E

Do not mix, transport or place concrete using equipment with aluminum or aluminum parts.

**Reason for Revision:** Concrete reacts with aluminum to form hydrogen gas which causes problem.

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| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |

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| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** X | **Industry Concurrence:** | **Yes** | **No** X |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Greg Mulder / Kevin Merryman | **Office:** Construction | **Item 5** |
| **Submittal Date:** October 31, 2013 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2102.04, A, 4<br>**Title:** Special Backfill Material (Roadway and Borrow Excavation) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The District 6 Office is concerned that the Engineer will need to write change orders to correct quantities as measured from tickets in the field. The cubic yard item will be used for recycling on the project which should not have any truck tickets.

**Specification Section Recommended Text:**

**2102.04, A, 4, Special Backfill Material.**

**Replace** the Article:

**a.** Tons (megagrams) ~~or cubic yards (cubic meters)~~ of material placed. If measurement by weight (mass) is impractical, material may be measured by volume in the transporting vehicle. This volume will be converted to tons (megagrams) using a conversion factor the Engineer determines.

**b.** ~~If measurement by weight (mass) is impractical, the material may be measured by volume in the transporting vehicle. This volume will be converted to tons (megagrams) using a conversion factor the Engineer determines.~~ Cubic yards (cubic meters) of Special Backfill will be the quantity shown in the contract documents.

**Comments:**

**Member's Requested Change (Redline/Strikeout):**

**2102.04 METHOD OF MEASUREMENT.**

**A.** Measurement for Roadway and Borrow Excavation will be as follows:

**4. Special Backfill Material.**

**a.** Tons (megagrams) ~~or cubic yards (cubic meters)~~ of material placed. If measurement by weight (mass) is impractical, the material may be measured by volume in the transporting vehicle. This volume will be converted to tons (megagrams) using a conversion factor the Engineer determines.

**b.** Cubic yards (cubic meters) of Special Backfill will be the quantity shown in the contract documents.

**Reason for Revision:** On large reconstruction projects with significant quantities of recycling, the Department has been using the cubic yard item for Special Backfill to eliminate the need for weighing of the material. Field staff have been entering into plan quantity agreements with contractors on these projects to avoid measuring Special Backfill per the specification. Making the CY item plan quantity by specification brings the spec. in line with the practice in the field.

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| **County or City Input Needed (X one)** | **Yes** | **No** X |

**Comments:**

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| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** Both AGC and ICPA were notified and support this change. This change brings the specification in line with the practice in the field. Most contractors expect a plan quantity agreement when MOM is by CY anyway. | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Greg Mulder / Melissa Serio | **Office:** Construction & Materials | **Item 6** |
| **Submittal Date:** October 31, 2013 | **Proposed Effective Date:** April 15, 2014 | |
| **Section No.:** 2107<br>**Title:** Embankments<br>**Section No.:** 2109<br>**Title:** Natural Subgrade<br>**Section No.:** 2511<br>**Title:** Removal and Construction of Sidewalks and Recreational Trails | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |
|---|---|---|---|

**Specification Committee Approved Text:**

**2107.03, Construction.**

**Add** the Article:

**P. Quality Control Program (Embankment Construction).**
On projects where the Department is the Contracting Authority:

**1.** Provide and maintain a Quality Control Program (Embankment Construction). This is defined as process control sampling, testing, and inspection as described in Materials I.M. 540 for construction of embankments with moisture control, or moisture and density control.

**2.** Provide a Quality Control Technician who is responsible for all process control sampling, testing, and inspection. The Quality Control Technician shall obtain Soils Technician certification through the Iowa DOT Technical Training and Certification Program (TTCP).

**3.** Provide a laboratory facility and necessary calibrated equipment to perform required tests.

**4.** Notify the Engineer when a moisture content falls outside specified control limits or density falls below required minimum. If a moisture content falls outside control limits, fill material in this area will be considered unacceptable for compaction. Perform corrective action(s) to bring uncompacted fill material within control limits. If material has been compacted, disk it, bring to within control limits, and re-compact. When project has a density requirement, if an in-place density does not meet the requirements, compacted fill material in this area will be considered unacceptable. Perform corrective action(s) to material to meet density requirements. Compensation will not be allowed for delays resulting from moistening, disking, or re-compacting.

**2107.05, A, 1, Compaction with Moisture and Density Control.**

**Add** the Article:

**c.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2107.05, A, 2, Compaction with Moisture Control.**

**Add** the Article:

**c.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2109.03, C, Special Compaction of Subgrade.**

**Add** the Article:

**5.** On projects where the Department is the Contracting Authority, perform process control sampling, testing, and inspection according to the provisions of Article 2107.03, P.

**2109.05, B.**

**Add** the Article:

**3.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2511.03, B, 2, b, 1.**

Add to the end of the Article:

On projects where the Department is the Contracting Authority, perform process control sampling, testing, and inspection according to Article 2107.03, P.

**2511.05, C, Special Compaction of Subgrade for Recreational Trail.**

**Add** the Article:

**3.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**Comments:** There will be a new Materials I.M. that covers the Quality Control Program (Embankment Construction).

The Office of Local Systems asked if all of Article 2107.03, P, only applies to projects where the Department is the Contracting Authority. The Office of Construction and Materials indicated that this was true, so the initial phrase of Article 1 was moved before Article 1 so that it is clear that all of Article P applies only to projects where the Department is the Contracting Authority.

The Office of Construction and Materials indicated that the eliminated DS's had rarely been used on Local Systems projects. If a City or County wanted to use these, they could override the "on projects where the Department is the Contracting Authority" in the plan.

DS-12021, 12022, and 12024 will be obsoleted for the April 2014 Letting.

**Specification Section Recommended Text:**

**2107.03, Construction.**

**Add** the Article:

**P. Quality Control Program (Embankment Construction).**

**1.** On projects where the Department is the Contracting Authority, provide and maintain a Quality Control Program (Embankment Construction). This is defined as process control sampling, testing, and inspection as described in Materials I.M. 540 for construction of embankments with moisture control, or moisture and density control.

**2.** Provide a Quality Control Technician who is responsible for all process control sampling, testing, and inspection. The Quality Control Technician shall obtain Soils Technician certification through the Iowa DOT Technical Training and Certification Program (TTCP).

**3.** Provide a laboratory facility and necessary calibrated equipment to perform required tests.

**4. Corrective Action.**

Notify Engineer when a moisture content falls outside specified control limits or density falls below required minimum. If a moisture content falls outside control limits, fill material in this area will be considered unacceptable for compaction. Perform

corrective action(s) to bring uncompacted fill material within control limits. If material has been compacted, disk it, bring to within control limits, and re-compact. When project has a density requirement, if an in-place density does not meet the requirements, compacted fill material in this area will be considered unacceptable. Perform corrective action(s) to material to meet density requirements. Compensation will not be allowed for delays resulting from moistening, disking, or re-compacting.

**2107.05, A, 1, Compaction with Moisture and Density Control.**

**Add** the Article:

**c.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2107.05, A, 2, Compaction with Moisture Control.**

**Add** the Article:

**c.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2109.03, C, Special Compaction of Subgrade.**

**Add** the Article:

**5.** On projects where the Department is the Contracting Authority, perform process control sampling, testing, and inspection according to the provisions of Article 2107.03, P.

**2109.05, B.**

**Add** the Article:

**3.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**2511.03, B, 2, b, 1.**

Add to the end of the Article:

On projects where the Department is the Contracting Authority, perform process control sampling, testing, and inspection according to Article 2107.03, P.

**2511.05, C, Special Compaction of Subgrade for Recreational Trail.**

**Add** the Article:

**3.** On projects where the Department is the Contracting Authority, payment includes process control sampling, testing, and inspection.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**Add the following as Article 2107.03, P.:**

**P. Quality Control Program (Embankment Construction).**

**1.** On projects where the Iowa DOT is the Contracting Authority, provide and maintain a Quality Control Program (Embankment Construction). This is defined as process control sampling, testing, and inspection as described in Materials I.M. 540 for construction of embankments with moisture control or moisture and density control.

**2.** Provide a Quality Control Technician who is responsible for all process control sampling, testing, and inspection. The Quality Control Technician is required to obtain Soils Technician certification through the Iowa DOT Technical Training and Certification Program (TTCP).

**3.** Provide a laboratory facility and necessary calibrated equipment to perform required tests.

**4. Corrective Action.**

Notify Engineer when a moisture content falls outside the specified control limits or density falls below

required minimum. If a moisture content falls outside the control limits, fill material in this area will be considered unacceptable for compaction. Perform corrective action(s) to bring uncompacted fill material within the control limits. If material has been compacted, disk it, bring to within control limits, and re-compact. When project has a density requirement, if an in-place density does not meet the requirements, compacted fill material in this area will be considered unacceptable. Perform corrective action(s) to material to meet density requirements. Compensation will not be allowed for delays resulting from moistening, disking, or re-compacting.

**Add the following as Article 2107.05, A, 1, c:**

**1. Compaction with Moisture and Density Control.**

**c.** On projects where the Iowa DOT is the Contracting Authority, payment is full compensation for process control sampling, testing, and inspection.

**Add the following as Article 2107.05, A, 2, c:**

**2. Compaction with Moisture Control.**

**c.** On projects where the Iowa DOT is the Contracting Authority, payment is full compensation for process control sampling, testing, and inspection.

**Add the following as Article 2109.03, C, 5:**

**C. Special Compaction of Subgrade.**

**5.** On projects where the Iowa DOT is the Contracting Authority, perform process control sampling, testing, and inspection according to the provisions of Article 2107.03, P.

**Add the following as Article 2109.05, B, 3:**

**2109.05 BASIS OF PAYMENT.**

**B.** Special Compaction of Subgrade:

**3. On projects where Iowa DOT is the Contracting Authority,** payment is full compensation for process control sampling, testing, and inspection.

**Revise the following Article 2511.03, B, 2, b, 1):**

**2. Preparation of Subgrade.**

**b. Recreational Trails.**

**1)** When the recreational trail is to be constructed on natural subgrade, special compaction of subgrade for the recreational trail will be required. Prepare subgrade according to Article 2109.03, C. On projects where the Iowa DOT is the Contracting Authority, perform process control sampling, testing, and inspection according to the provisions of Article 2107.03, P.

**Add the following as Article 2511.05, C, 3:**

**C. Special Compaction of Subgrade for Recreational Trail.**

**3. On projects where Iowa DOT is the Contracting Authority,** payment is full compensation for process control sampling, testing, and inspection.

**Reason for Revision:**

Incorporate developmental specifications (DS-12021, 12022, and 12024) into the specifications. These requirements will apply to projects where DOT is contracting authority.

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** x |
| **Comments:** Local agency use of these DS's has been very small. However, if local agencies want requirements to apply to their projects, they can add a note in the plans referring to the spec. | | |

| | | | | | |
|---|---|---|---|---|---|
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** x | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** None | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder | **Office:** Construction & Materials | **Item 7** |
| **Submittal Date:** 2013.11.08 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2301.03, U, 1<br>**Title:** Portland Cement Concrete Pavement | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2301.03, U, 1.**

**Replace** Table 2301.03-2, Minimum Flexural Strength:

**Table 2301.03-2: Minimum Flexural Strength**

| Strength Class of Concrete | Minimum Age | psi (MPa) |
|---|---|---|
| A | 14 calendar days[(a)] | 500 (3.45) |
| B | 14 calendar days | 400 (2.80) |
| C | 7 calendar days[(b)] | 500 (3.45) |
| M | 48 hours[(c)] | 500 (3.45) |

(a) 10 calendar days for concrete 8 inches (200 mm) thick or more.
(b) 5 calendar days for concrete 9 inches (230 mm) thick or more.
(c) Pavement may be opened for use prior to 48 hours when minimum flexural strength requirements are met.

**Comments:**

**Member's Requested Change (Redline/Strikeout):**

**U. Time for Opening Pavement for Use.**

**1.** The time for opening pavement for use will be based on the restrictions listed in Table 2301.03-2, with flexural strength determined from beam specimens made during the progress of the work.

**Table 2301.03-2: Minimum Flexural Strength**

| Strength Class of Concrete | Minimum Age | psi (MPa) |
|---|---|---|
| A | 14 calendar days[(a)] | 500 (3.45) |
| B | 14 calendar days | 400 (2.80) |
| C | 7 calendar days[(b)] | 500 (3.45) |
| M | 48 hours[(c)] | 500 (3.45) |

(a) 10 calendar days for concrete 8 inches (200 mm) thick or more.
(b) 5 calendar days for concrete 9 inches (230 mm) thick or more.
(c) Pavement may be opened for use prior to 48 hours when minimum flexural strength requirements are met.

| | | | | | |
|---|---|---|---|---|---|
| **Reason for Revision:** Industry requested the option to open segments earlier than 48 hours provided adequate flexural strength was achieved. Typically achieve opening strength in less than 24 hours during summer conditions. | | | | | |
| **County or City Input Needed (X one)** | | | **Yes** | **No** x | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 8** |
| **Submittal Date:** October 31, 2013 | **Proposed Effective Date:** April 15, 2014 | |
| **Article No.:** 2403.02,B, 3<br>**Title:** Entrained Air Content | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2403.02, B, 3, Entrained Air Content.**

**Replace** the fourth sentence:

To allow for loss during placement, use a target value of 6.5%, with a maximum variation of -1.0% and +~~1.5~~ 2.0%, for the air content of fresh, unvibrated structural concrete.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'.Use ~~Strikeout~~ and Highlight.**

**3. Entrained Air Content.**

Use an approved air entraining agent complying with Section 4103 to accomplish air entrainment. Air content will be tested according to Materials I.M. 318. The intended air entrainment is 6%. To allow for loss during placement, use a target value of 6.5%, with a maximum variation of -1.0% and ~~+1.5~~ 2.0%, for the air content of fresh, unvibrated structural concrete.

**Reason for Revision:** Structural concrete actual strengths are typically higher than the design strengths specified. Increasing the allowable maximum entrained air content by 0.5% will provide for more flexibility in production and placement of the structural concrete mix while having minimal effect on the strength (ie: 1.0% excess air content reduces structural concrete strength by approximately 500 psi).

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** |
| **Comments:** | | |

| | | | | | |
|---|---|---|---|---|---|
| **Industry Input Needed (X one)** | | | **Yes** | **No** | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Kyle Frame | **Office:** Construction and Materials | **Item 9** |
| **Submittal Date:** 2013.10.30 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2433.03<br>**Title:** Construction (Concrete Drilled Shaft) | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |
|---|---|---|---|

**Specification Committee Approved Text:**

**2433.03, L, 1, a, Confirmation Boring and Sampling.**

**Replace** the Article:

**1)** Prior to installation of the test shaft, complete a confirmation boring at the test shaft location to a depth 10 feet (3 m) below the bottom elevation as shown in the contract document or a minimum of 30 feet (10 m) into the bedrock, whichever is greater.

**2)** Perform standard penetration tests according to ASTM D 1586 in the soil overlying bedrock. Perform the tests on 5 foot (1.5 m) centers. Use sample retainers in cohesionless soils to ensure recovery of material for classification and direct shear tests.

**3)** Determine moisture contents on the soil samples. Continue soil sampling and testing with split barrel (spoon) sampling, according to ASTM D 1586, until the top of bedrock is encountered.

**4)** For each cohesive soil layer exceeding 2 feet (0.6 m) in thickness, obtain 3 inch (76 mm) diameter Shelby tube samples according to ASTM D 1587. For uniform cohesive soil layers greater than 10 feet (3 m) thick, collect Shelby tube samples from at least three different elevations. Shelby tubes shall be at least 30 inches (762 mm) in length and not overdriven.

~~**4**~~ **5)** Core the rock using double barrel diamond coring methods producing a minimum 1.75 inch (44.4 mm) core according to ASTM D 2113, or other approved sampling method. Keep records, including Percent Core Recovery and Rock Quality Designation, according to ASTM D 2113 and D 6032. Preserve rock samples at their natural moisture content and condition. Transport them to the laboratory for classification by a Professional Engineer licensed in the State of Iowa.

~~**5**~~ **6)** Test representative samples of intact rock for unconfined compressive strength according to ASTM D 2938, except record stress and strain according to ASTM D 2166, up to 20% strain or failure, whichever occurs first. Prepare a stress-strain plot. In addition, list the unconfined compressive strength.

~~**6**~~ **7)** Perform one unconfined compression test for every 3 feet (1.0 m) of rock core. The Engineer will select test samples.

**8)** Deliver soil samples to the Engineer.

~~**7**~~ **9)** Do not install test shafts until the results of the confirmation boring have been submitted and reviewed and incorporated in the proposed load test program to be submitted according to Materials I.M. 388.

~~**8**~~ **10)** Engineer will complete the review of the confirmation boring report within 7 calendar days after submittal and the proposed load cell test program report within 7 calendar days after submittal.

**Comments:** The Office of Construction and Materials requested to eliminate the requirement to allow the Engineer to perform Borehole Shear Tests during drilling. This testing is done by Iowa State and the Department can't guarantee that the Contractor wouldn't be delayed for this testing if it is required.

**Specification Section Recommended Text:**

**2433.03, L, 1, a, Confirmation Boring and Sampling.**

**Replace** the Article:

**1)** Prior to installation of the test shaft, complete a confirmation boring at the test shaft location to a depth 10 feet (3 m) below the bottom elevation as shown in the contract document or a minimum of 30 feet (10 m) into the bedrock, whichever is greater.

**2)** Perform standard penetration tests according to ASTM D 1586 in the soil overlying bedrock. Perform the tests on 5 foot (1.5 m) centers. Use sample retainers in cohesionless soils to ensure recovery of material for classification and direct shear tests.

**3)** Determine moisture contents on the soil samples. Continue soil sampling and testing with split barrel (spoon) sampling, according to ASTM D 1586, until the top of bedrock is encountered.

**4)** For each cohesive soil layer exceeding 2 feet (0.6 m) in thickness, obtain 3 inch (76 mm) diameter Shelby tube samples according to ASTM D 1587. For uniform cohesive soil layers greater than 10 feet (3 m) thick, collect Shelby tube samples from at least three different elevations. Shelby tubes shall be at least 30 inches (762 mm) in length and not overdriven.

**~~4~~ 5)** Core the rock using double barrel diamond coring methods producing a minimum 1.75 inch (44.4 mm) core according to ASTM D 2113, or other approved sampling method. Keep records, including Percent Core Recovery and Rock Quality Designation, according to ASTM D 2113 and D 6032. Preserve rock samples at their natural moisture content and condition. Transport them to the laboratory for classification by a Professional Engineer licensed in the State of Iowa.

**~~5~~ 6)** Test representative samples of intact rock for unconfined compressive strength according to ASTM D 2938, except record stress and strain according to ASTM D 2166, up to 20% strain or failure, whichever occurs first. Prepare a stress-strain plot. In addition, list the unconfined compressive strength.

**~~6~~ 7)** Perform one unconfined compression test for every 3 feet (1.0 m) of rock core. The Engineer will select test samples.

**8)** Allow the Engineer to perform Borehole Shear Tests during drilling (approximately two to five tests per borehole).

**9)** Deliver soil samples to the Engineer.

**~~7~~ 10)** Do not install test shafts until the results of the confirmation boring have been submitted and reviewed and incorporated in the proposed load test program to be submitted according to Materials I.M. 388.

**~~8~~ 11)** Engineer will complete the review of the confirmation boring report within 7 calendar days after submittal and the proposed load cell test program report within 7 calendar days after submittal.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

Replace Article 2433.03 L 1 a:

**~~a. Confirmation Boring and Sampling.~~**

**~~1)~~** ~~Prior to installation of the test shaft, complete a confirmation boring at the test shaft location to a depth 10 feet (3 m) below the bottom elevation as shown in the contract document or a minimum of 30 feet (10 m) into the bedrock, whichever is greater.~~

**~~2)~~** ~~Perform standard penetration tests according to ASTM D 1586 in the soil overlying bedrock. Perform the tests on 5 foot (1.5 m) centers.~~

**~~3)~~** ~~Determine moisture contents on the soil samples. Continue soil sampling and testing with split barrel (spoon) sampling, according to ASTM D 1586, until the top of bedrock is encountered.~~

**~~4)~~** ~~Core the rock using double barrel diamond coring methods producing a minimum 1.75 inch (44.4 mm) core according to ASTM D 2113, or other approved sampling method. Keep records, including Percent Core Recovery and Rock Quality Designation, according to ASTM D 2113 and D 6032. Preserve rock samples at their natural moisture content and condition. Transport them to the laboratory for~~

~~classification by a Professional Engineer licensed in the State of Iowa.~~

~~**5)** Test representative samples of intact rock for unconfined compressive strength according to ASTM D 2938, except record stress and strain according to ASTM D 2166, up to 20% strain or failure, whichever occurs first. Prepare a stress-strain plot. In addition, list the unconfined compressive strength.~~

~~**6)** Perform one unconfined compression test for every 3 feet (1.0 m) of rock core. The Engineer will select test samples.~~

~~**7)** Do not install test shafts until the results of the confirmation boring have been submitted and reviewed and incorporated in the proposed load test program to be submitted according to Materials I.M. 388.~~

~~**8)** The Engineer will complete the review of the confirmation boring report within 7 calendar days after submittal and the proposed load cell test program report within 7 calendar days after submittal.~~

**a. Confirmation Boring and Sampling.**

**1)** Prior to installation of the test shaft, complete a confirmation boring at the test shaft location to a depth 10 feet (3 m) below the bottom elevation as shown in the contract document or a minimum of 30 feet (10 m) into the bedrock, whichever is greater.

**2)** Perform standard penetration tests according to ASTM D 1586 in the soil overlying bedrock. Perform the tests on 5 foot (1.5 m) centers. Use sample retainers in cohesionless soils to ensure recovery of material for classification and direct shear tests.

**3)** Determine moisture contents on the soil samples. Continue soil sampling and testing with split barrel (spoon) sampling, according to ASTM D 1586, until the top of bedrock is encountered.

**4)** For each cohesive soil layer exceeding 2 feet in thickness, obtain 3-inch diameter Shelby tube samples according to ASTM D 1587. For uniform cohesive soil layers greater than 10 feet thick, collect Shelby tube samples from at least three different elevations. Shelby tubes should be at least 30 inches in length and not overdriven.

**5)** Core the rock using double barrel diamond coring methods producing a minimum 1.75 inch (44.4 mm) core according to ASTM D 2113, or other approved sampling method. Keep records, including Percent Core Recovery and Rock Quality Designation, according to ASTM D 2113 and D 6032. Preserve rock samples at their natural moisture content and condition. Transport them to the laboratory for classification by a Professional Engineer licensed in the State of Iowa.

**6)** Test representative samples of intact rock for unconfined compressive strength according to ASTM D 2938, except record stress and strain according to ASTM D 2166, up to 20% strain or failure, whichever occurs first. Prepare a stress-strain plot. In addition, list the unconfined compressive strength.

**7)** Perform one unconfined compression test for every 3 feet (1.0 m) of rock core. The Engineer will select test samples.

**8)** Allow the contracting authority or their representative to perform Borehole Shear Tests during drilling (approximately 2 to 5 tests per borehole).

**9)** Deliver all soil samples to the Engineer.

**10)** Do not install test shafts until the results of the confirmation boring have been submitted and reviewed and incorporated in the proposed load test program to be submitted according to Materials I.M. 388.

**11)** Engineer will complete the review of the confirmation boring report within 7 calendar days after submittal and the proposed load cell test program report within 7 calendar days after submittal.

**Reason for Revision:** Adding additional criteria to the Confirmation Boring and Sampling article. This information will be used to improve the future designs of drilled shafts.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Tom Reis / Eric Johnsen | **Office:** Specifications Section | **Item 10** |
| **Submittal Date:** October 17, 2013 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2503.03<br>**Title:** Construction (Storm Sewers)<br>**Article No.:** 2504.03, K<br>**Title:** Conflicts (Sanitary Sewers)<br>**Article No.:** 2554.03, A, 7<br>**Title:** Conflicts (Water Mains, Valves, Fire Hydrants, and Appurtenances) | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 2/18/2014 |
|---|---|---|---|

**Specification Committee Approved Text:**

**2503.03, Construction:**

**Renumber** Articles F, G, and H to Articles G, H, and I, respectively.

**Add** the Article:

**F. Conflicts.**

Apply Article 2554.03, A, 7.

**2504.03, K, Conflicts.**

**Replace** the Article:

~~**1. Horizontal Separation of Gravity Sewers from Water Mains.**~~

~~**a.** Separate gravity sewer mains from water mains by a horizontal distance of at least 10 feet (3 m) unless:~~

- ~~The top of a sewer main is at least 18 inches (450 mm) below the bottom of the water main, and~~
- ~~The sewer is placed in a separate trench or in the same trench on a bench of undisturbed earth at a minimum horizontal separation of 3 feet (1 m) from the water main.~~

~~**b.** When it is impossible to obtain horizontal clearance of 3 feet (1 m) and vertical clearance of 18 inches (450 mm) between sewers and water mains, the sewers shall be constructed of water main materials meeting the requirements of Article 4149.02, B; however, provide a linear separation of at least 2 feet (600 mm).~~

~~**2. Separation of Sewer Force Mains from Water Mains.**~~

~~Separate sewer force mains and water mains by a horizontal distance of at least 4 linear feet (1.2 m).~~

~~**3. Separation of Sewer and Water Main Crossovers.**~~

~~**a.** Vertical separation of sanitary sewers crossing under any water main should be at least 18 inches (450 mm) when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches (150 mm) below a water main or 18 inches (450 mm) above a water main. Maintain the maximum feasible separation distance in all cases.~~

~~**b.** Where the sewer crosses over or less than 18 inches (450 mm) below a water main, locate one full length of sewer pipe of water main material so both joints are as far as possible from the water main. The sewer and water pipes shall be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet (3 m) of the point of crossing.~~

Apply Article 2554.03, A, 7.

**2554.03, A, 7, Conflicts.**

**Replace** the Article

**a. Horizontal Separation of Gravity Sewers from Water Mains.**

**1)** Separate gravity sewer mains from water mains by a horizontal distance of at least 10 feet (3 m) unless:

- The top of a sewer main is at least 18 inches (450 mm) below the bottom of the water main,

and

- The sewer is placed in a separate trench or in the same trench on a bench of undisturbed earth at a minimum horizontal separation of 3 feet (1 m) from the water main.

**2)** When it is impossible to obtain horizontal clearance of 3 feet (1 m) and a vertical clearance of 18 inches (450 mm) between sewers and water mains, the sewers shall be constructed of water main materials meeting the requirements of Article 4150.02, A. However, provide a linear separation of at least 2 feet (600 mm).

**b. Separation of Sewer Force Mains from Water Mains.**

Separate sewer force mains and water mains by a horizontal distance of at least ~~4 linear~~ 10 feet (~~1.2~~ 3 m)~~.~~ unless:

- Sewer force main is constructed of water main materials meeting a minimum pressure rating of 150 psi (1000 kPa) and the requirements of Article 4150.02, A, and
- Sewer force main is laid at least 4 linear feet (1.2 m) from water main.

**c. Separation of Sewer and Water Main Crossovers.**

**1)** Vertical separation of sanitary sewers crossing under any water main should be at least 18 inches (450 mm) when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches (150 mm) below a water main or 18 inches (450 mm) above a water main. Maintain the maximum feasible separation distance in all cases.

**2)** Where the sewer crosses over or less than 18 inches (450 mm) below a water main, locate one full length of sewer pipe of water main material (or reinforced concrete pipe with rubber O-ring or profile gasket per Article 4149.03, A, for storm sewer) so both joints are as far as possible from the water main. The sewer and water pipes shall be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet (3 m) of the point of crossing.

**d. Surface Water Crossings.**

Comply with Recommended Standards for Water Works, 2007 Edition (Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers).

**1) Above-water Crossings.**

Ensure pipe is adequately supported and anchored; protected from vandalism, damage, and freezing; and accessible for repair or replacement.

**2) Underwater Crossings.**

Provide minimum cover of 5 feet (1.6 m) over pipe unless otherwise specified in the contract documents. When crossing water courses greater than 15 feet (4.6 m) in width, provide the following.

**a)** Pipe with flexible, restrained, or welded watertight joints,

**b)** Valves at both ends of water crossings so the section can be isolated for testing or repair; ensure valves are easily accessible and not subject to flooding, and

**c)** Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source.

**Comments:** This specification revision will be issued as a DS for the February Letting. It will be incorporated into the Standard Specifications in April.

The Office of Construction and Materials asked if all of the conflict information needs to be in the specifications. Known conflicts should be noted in the contract documents and designed for. Unknown conflicts will be handled by extra work order. Since the Iowa DNR is already enforcing these requirements, the Committee approved this revision and will discuss inclusion of the conflicts sections in the future.

The Office of Local Systems requested to add “and” to the first bullet of Article 2554.03, A, 7, b, so that both bullets must be met.

A committee member asked if the Recommended Standards for Water Works, 2007 Edition is readily available. An internet search brought up the document. The association responsible for the document was added to the specification for clarification.

**Specification Section Recommended Text:**

**2503.03, Construction:**

**Renumber** Articles F, G, and H to Articles G, H, and I, respectively.

**Add** the Article:

**F. Conflicts.**

Apply Article 2554.03, A, 7.

**2504.03, K, Conflicts.**

**Replace** the Article:

~~**1. Horizontal Separation of Gravity Sewers from Water Mains.**~~

~~**a.** Separate gravity sewer mains from water mains by a horizontal distance of at least 10 feet (3 m) unless:~~

- ~~The top of a sewer main is at least 18 inches (450 mm) below the bottom of the water main, and~~
- ~~The sewer is placed in a separate trench or in the same trench on a bench of undisturbed earth at a minimum horizontal separation of 3 feet (1 m) from the water main.~~

~~**b.** When it is impossible to obtain horizontal clearance of 3 feet (1 m) and vertical clearance of 18 inches (450 mm) between sewers and water mains, the sewers shall be constructed of water main materials meeting the requirements of Article 4149.02, B; however, provide a linear separation of at least 2 feet (600 mm).~~

~~**2. Separation of Sewer Force Mains from Water Mains.**~~

~~Separate sewer force mains and water mains by a horizontal distance of at least 4 linear feet (1.2 m).~~

~~**3. Separation of Sewer and Water Main Crossovers.**~~

~~**a.** Vertical separation of sanitary sewers crossing under any water main should be at least 18 inches (450 mm) when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches (150 mm) below a water main or 18 inches (450 mm) above a water main. Maintain the maximum feasible separation distance in all cases.~~

~~**b.** Where the sewer crosses over or less than 18 inches (450 mm) below a water main, locate one full length of sewer pipe of water main material so both joints are as far as possible from the water main. The sewer and water pipes shall be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet (3 m) of the point of crossing.~~

Apply Article 2554.03, A, 7.

**2554.03, A, 7, Conflicts.**

**Replace** the Article

**a. Horizontal Separation of Gravity Sewers from Water Mains.**

**1)** Separate gravity sewer mains from water mains by a horizontal distance of at least 10 feet (3 m) unless:

- The top of a sewer main is at least 18 inches (450 mm) below the bottom of the water main, and
- The sewer is placed in a separate trench or in the same trench on a bench of undisturbed earth at a minimum horizontal separation of 3 feet (1 m) from the water main.

**2)** When it is impossible to obtain horizontal clearance of 3 feet (1 m) and a vertical clearance of 18 inches (450 mm) between sewers and water mains, the sewers shall be constructed of water main materials meeting the requirements of Article 4150.02, A. However, provide a linear separation of at least 2 feet (600 mm).

**b. Separation of Sewer Force Mains from Water Mains.**

Separate sewer force mains and water mains by a horizontal distance of at least ~~4 linear~~ 10 feet (~~1.2~~ 3 m)~~.~~ unless:

- Sewer force main is constructed of water main materials meeting a minimum pressure rating of 150 psi (1000 kPa) and the requirements of Article 4150.02, A.
- Sewer force main is laid at least 4 linear feet (1.2 m) from water main.

**c. Separation of Sewer and Water Main Crossovers.**

**1)** Vertical separation of sanitary sewers crossing under any water main should be at least 18 inches (450 mm) when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches (150 mm) below a water main or 18 inches (450 mm) above a water main. Maintain the maximum feasible separation distance in all cases.

**2)** Where the sewer crosses over or less than 18 inches (450 mm) below a water main, locate one full length of sewer pipe of water main material (or reinforced concrete pipe with rubber O-ring or profile gasket per Article 4149.03, A, for storm sewer) so both joints are as far as possible from the water main. The sewer and water pipes shall be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet (3 m) of the point of crossing.

**d. Surface Water Crossings.**

Comply with Recommended Standards for Water Works, 2007 Edition.

**1) Above-water Crossings.**

Ensure pipe is adequately supported and anchored; protected from vandalism, damage, and freezing; and accessible for repair or replacement.

**2) Underwater Crossings.**

Provide minimum cover of 5 feet (1.6 m) over pipe unless otherwise specified in the contract documents. When crossing water courses greater than 15 feet (4.6 m) in width, provide the following.

**a)** Pipe with flexible, restrained, or welded watertight joints,

**b)** Valves at both ends of water crossings so the section can be isolated for testing or repair; ensure valves are easily accessible and not subject to flooding, and

**c)** Permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**Reason for Revision:** To reflect Iowa DNR enforcement of sewer pipes (sanitary and storm) crossing water mains.

| | | |
|---|---|---|
| **County or City Input Needed (X one)** | **Yes** | **No** X |

**Comments:** These revisions are the result of SUDAS revisions that have been voted on by the SUDAS districts and are to be approved by the SUDAS board on November 1, 2013

| | | | | | |
|---|---|---|---|---|---|
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |

**Comments:**

# SUDAS Revision Submittal Form

| | | | |
|---|---|---|---|
| **Status Date:** | As of 10/8/13 | **Topic:** | Sewer and water main separation |
| **Manual:** | Specifications | **Manual Location:** | Sections 4020 and 5010 |
| | Design | | Sections 2D-1 and 4C-1 |

**Requested Revision:**

**4020, 3.06 - Conflicts** - *new subsection (subsections that follow will be renumbered). New subsection will be added to Design Section 2D-1.*

The following separation information is derived from Iowa DNR's *Iowa Wastewater Facilities Design Standards*, Chapter 12, Section 12.5.8

**A. Horizontal Separation of Gravity Sewers from Water Mains:**

1. Separate gravity sewer mains from water mains by a horizontal distance of at least 10 feet unless:
   - The top of a sewer main is at least 18 inches below the bottom of the water main, and
   - The sewer is placed in a separate trench or in the same trench on a bench of undisturbed earth at a minimum horizontal separation of 3 feet from the water main.

2. When it is impossible to obtain the required horizontal clearance of 3 feet and a vertical clearance of 18 inches between sewers and water mains, the sewers must be constructed of water main materials meeting the requirements of Section 5010, 2.01. However, provide a linear separation of at least 2 feet.

**B. Separation of Sewer Force Mains from Water Mains:** Separate sewer force mains and water mains by a horizontal distance of at least 10 feet unless:

1. The force main is constructed of water main materials meeting a minimum pressure rating of 150 psi and the requirements of Section 5010, 2.01 and

2. The sewer force main is laid at least 4 linear feet from the water main.

**C. Separation of Sewer and Water Main Crossovers:**

1. Vertical separation of storm sewers crossing under any water main should be at least 18 inches when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches below a water main or 18 inches above a water main. Maintain the maximum feasible separation distance in all cases. The sewer and water pipes must be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet of the point of crossing.

2. Where the storm sewer crosses over or less than 18 inches below a water main, locate one full length of sewer pipe of water main material or reinforced concrete pipe (RCP) with flexible O-ring gasket joints so both joints are as far as possible from the water main.

**5010, 3.07 - Conflicts** - *A and B are the same as above. The corresponding changes will also be made to Design Section 4C-1.*

.....

**C. Separation of Sewer and Water Main Crossovers:**

1. Vertical separation of sanitary and storm sewers crossing under any water main should be at least 18 inches when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches below a water main or 18 inches above a water main. Maintain the maximum feasible separation distance in all cases. The sewer and water pipes must be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet of the point of crossing.

2. Where the sanitary sewer crosses over or less than 18 inches below a water main, locate one full length of sewer pipe of water main material so both joints are as far as possible from the water main. ~~The sewer and water pipes must be adequately supported and have watertight joints. Use a low permeability soil for backfill material within 10 feet of the point of crossing.~~

3. Where the storm sewer crosses over or less than 18 inches below a water main, locate one full length of sewer pipe of water main material or reinforced concrete pipe (RCP) with flexible O-ring gasket joints so both joints are as far as possible from the water main.

**D. Surface Water Crossings:** Comply with the Recommended Standards for Water Works, 2007 Edition.

**1. Above-water Crossings:** Ensure the pipe is adequately supported and anchored; protected from vandalism, damage, and freezing; and accessible for repair or replacement.

**2. Underwater Crossings:** Provide a minimum cover of 5 feet over the pipe unless otherwise specified in the contract documents. When crossing water courses that are greater than 15 feet in width, provide the following.
   a. pipe with flexible, restrained, or welded watertight joints,
   b. valves at both ends of water crossings so the section can be isolated for testing or repair; ensure the valves are easily accessible and not subject to flooding, and
   c. permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source.

**Reason for Revision:** Modify to reflect Iowa DNR enforcement of sewer pipes (sanitary and storm) crossing water mains.

**Comments:** In order to incorporate these revisions in a timely manner, the districts will only review this item once.

Fields of Opportunities

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

September 25, 2013

MR. PAUL WIEGAND, P.E.
STATEWIDE URBAN DESIGN AND SPECIFICATIONS
2711 SOUTH LOOP DRIVE, SUITE 4700
AMES IA 50010

Dear Mr. Wiegand,

After reviewing Division 5, "Water Mains and Appurtenances" of the *Statewide Urban Design and Specifications (SUDAS), 2013 Edition,* the Department would like the following changes and additions to be incorporated into the 2014 SUDAS edition:

**1. Replace section 3.07, part C with the following:**

C. Separation of Sewer and Water Main Crossovers:

1. Vertical separation of sanitary and storm sewers crossing under any water main should be at least 18 inches when measured from the top of the sewer to the bottom of the water main. If physical conditions prohibit the separation, the sewer may be placed not closer than 6 inches below a water main or 18 inches above a water main. Maintain the maximum feasible separation distance in all cases. The sewer and water pipes must be adequately supported and have watertight joints. Use a low permeability soil for back fill material within 10 feet of the point of crossing

2. Where the sanitary sewer crosses over or less than 18 inches below a water main, locate one full length of sewer pipe of water main material so both joints are as far as possible from the water main.

3. Where the storm sewer crosses over or less than 18 inches below a water main, locate one full length of sewer pipe of water main material or reinforced concrete pipe (RCP) with flexible o-ring gasket joints so both joints are as far as possible from the water main.

**2. Add the following requirements for surface water crossings:**

SURFACE WATER CROSSINGS
Surface water crossings shall be in accordance with the Recommended Standards for Water Works, 2007 Edition.

A. Above-water crossings
The pipe shall be adequately supported and anchored, protected from vandalism, damage and freezing, and accessible for repair or replacement.

B. Underwater crossings

1. A minimum cover of five feet shall be provided over the pipe unless otherwise approved by the reviewing authority. When crossing water courses which are greater than 15 feet in width, the following shall be provided:

    a. the pipe shall be of special construction, having flexible, restrained or welded watertight joints,
    b. valves shall be provided at both ends of water crossings so that the section can be isolated for testing or repair; the valves shall be easily accessible, and not subject to flooding, and
    c. permanent taps or other provisions to allow insertion of a small meter to determine leakage and obtain water samples on each side of the valve closest to the supply source.

If you have any questions, please contact A.J. Montefusco at 515.725.0277 or via e-mail at aj.montefusco@dnr.iowa.gov.

Sincerely,

Dennis J. Alt
Environmental Program Supervisor

cc: SUDAS Water Std Spec File

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 11** |
| **Submittal Date:** 2013.10.30 | **Proposed Effective Date:** April 15, 2014 | |
| **Article No.:** 2507.01<br>**Title:** Description (Concrete and Stone Revetment) | **Other:** | |

**Specification Committee Action:** Approved with changes.

| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |
|---|---|---|---|

**Specification Committee Approved Text:**

**2507.01, Description.**

**Add** the Article:

**C.** Place a layer of stone or concrete under overhead structures or along bridge wings for protection of earth slopes against erosion.

**2507.02, Materials.**

**Replace** Article A and title:

**A. Revetment and Erosion Stone.**

Meet requirements of ~~Division~~ Section 4130 for the material specified.

**Replace** Article D:

Meet requirements of Section 4196 and listed on the appropriate Materials I.M. 496.01, Appendix ~~C~~.

**Add** the Articles:

**E. Concrete for Slope Protection.**
Meet the requirements of Section 2403. Concrete shall have a Class 1, floated surface finish.

**F. Reinforcing Steel.**
Meet the requirements of Section 2404.

**G. Preformed Joint Filler.**
Meet the requirements of Article 4136.03, A.

**H. Macadam Stone.**
Meet the requirements of Section 4122. Choke Stone is not allowed.

**I. Treated Timbers.**
Meet the requirements of Section 4163. Preservative treatment shall follow requirements for guardrail posts.

**J. Granular Subbase.**
Meet the requirements of Section 4121.

**K. Porous Backfill.**
Meet the requirements of Section 4131.

**2507.03, Construction.**

**Add** the Articles:

**F. Concrete Slope Protection.**

**1.** Compact and shape bridge berm foreslope to the dimensions and elevations shown in the contract documents. Berm foreslope shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric. If fabric is lapped, laps shall be a minimum of 1 foot (0.3 m) in width, with the up slope lap on top and stapled for continuity.

**3.** Prewet granular subbase and deposit by a method approved by the Engineer. Thoroughly tamp or vibrate granular subbase to ensure compaction.

**4.** Pour concrete to the dimensions shown in the contract documents. Pour concrete in equal widths of approximately 10 feet (3 m). Do not pour adjacent courses within 15 hours of each other. Stagger joints in the direction of the slope one half block width. Place preformed joint filler in joints as shown in the contract documents. Fill voids around pier columns with commercial bituminous patching material.

**G. Macadam Stone Slope Protection.**

**1.** Compact and shape bridge berm foreslope to the dimensions and elevations shown in the contract documents. Berm foreslope shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric. If fabric is lapped, laps shall be a minimum of 1 foot (0.3 m) in width, with the up slope lap on top and stapled for continuity.

**3.** When required, place treated timber edging and secure with steel pins or rebar as shown in the contract documents.

**4.** Place and compact porous backfill or granular subbase at front face of abutment footing as shown in the contract documents.

**5.** Deposit, spread, consolidate, and shape macadam stone by mechanical or hand methods that provide uniform depth and density and provide uniform surface appearance.

**H. Bridge Wing Armoring.**

**1.** Compact and shape area to receive armoring to the dimensions and elevations shown in the contract documents. Area shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric.

3. When required, place treated timber edging and secure with steel pins or rebar as shown in the contract documents.

**4.** Deposit, spread, consolidate, and shape macadam stone or erosion stone, as specified, by mechanical or hand methods that provide uniform depth and density and provide uniform surface appearance.

**2507.04, Method of Measurement.**

**Add** the Article:

**F.** Slope Protection, of the type specified, and Bridge Wing Armoring, of the type specified: computed in square yards (square meters) from measurements of the surface as constructed to the nearest 0.1 foot (0.1 m).

**2507.05, Basis of Payment.**

**Add** the Article:

**D.** Payment for Slope Protection, of the type specified, and Bridge Wing Armoring, of the type specified, will be at the contract unit price per square yard (square meter).

**1.** Payment for Concrete Slope Protection is full compensation for material and labor required to construct concrete slope protection as shown in the contract documents, including:

- Excavation, shaping and compaction,
- Engineering fabric,
- Granular subbase,
- Class C Structural Concrete,
- Reinforcing steel,
- Preformed joint filler, and
- Commercial bituminous patching material.

**2.** Payment for Macadam Stone Slope Protection is full compensation for material and labor required to construct the macadam stone slope protection as shown in the contract documents, including:

- Excavation, shaping and compaction,
- Engineering fabric,
- Treated timber edging (including steel pins or rebar),
- Porous backfill or granular subbase, and
- Macadam stone.

**3.** Payment for Bridge Wing Armoring, of the type specified, is full compensation for material and labor required to construct the bridge wing armoring as shown in the contract documents, including:

- Excavation, shaping, and compaction.
- Engineering fabric,
- Treated timber edging (including steel pins or rebar) (when required), and
- Macadam stone or erosion stone, as specified.

**4.** Disposal of excess soil from shaping or trenching shall be incidental.

**5.** When erosion control work has previously been completed, Contractor shall be responsible for plant materials destroyed adjacent to slope protection. Contractor shall replant, reseed, and remulch all areas in accordance with Section 2601 at no cost to the Contracting Authority.

**Comments:** The Offices of Construction & Materials and Bridges & Structures made the following requests that were accommodated:

- Add Erosion Stone materials specifications.
- Revise Engineering Fabric Materials Specifications that refer to Materials I.M. 496.01, Appendix G.
- Indicate that no Choke Stone is allowed for Macadam Stone.
- Change the materials reference for Treated Timbers to Section 4163.
- Add “and elevations” to the construction section of the three added articles.
- In Article 2507.03, F, 4, change the preformed joint filler requirement to “as shown in the contract

documents", as it is placed in multiple locations.

- Include treated timber construction requirement (Article 2507.03, H, 3) in Article 2507.03, G.

The Office of Contracts will move the bid items that had previously been in the 2601 series to the 2507 series.

**Specification Section Recommended Text:**

**2507.01, Description.**

**Add** the Article:

**C.** Place a layer of stone or concrete under overhead structures or along bridge wings for protection of earth slopes against erosion.

**2507.02, Materials.**

**Add** the Articles:

**E. Concrete for Slope Protection.**
Meet the requirements of Section 2403. Concrete shall have a Class 1, floated surface finish.

**F. Reinforcing Steel.**
Meet the requirements of Section 2404.

**G. Preformed Joint Filler.**
Meet the requirements of Article 4136.03, A.

**H. Macadam Stone.**
Meet the requirements of Section 4122.

**I. Treated Timbers.**
Meet the requirements of Section 4164. Preservative treatment shall follow requirements for guardrail posts.

**J. Granular Subbase.**
Meet the requirements of Section 4121.

**K. Porous Backfill.**
Meet the requirements of Section 4131.

**2507.03, Construction.**

**Add** the Articles:

**F. Concrete Slope Protection.**

**1.** Compact and shape bridge berm foreslope to the dimensions shown in the contract documents. Berm foreslope shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric. If fabric is lapped, laps shall be a minimum of 1 foot (0.3 m) in width, with the up slope lap on top and stapled for continuity.

**3.** Prewet granular subbase and deposit by a method approved by the Engineer. Thoroughly tamp or vibrate granular subbase to ensure compaction.

**4.** Pour concrete to the dimensions shown in the contract documents. Pour concrete in equal widths of approximately 10 feet (3 m). Do not pour adjacent courses within 15 hours of each other. Stagger joints in the direction of the slope one half block width. Place preformed joint filler in joints normal to the direction of the slope. Fill voids

around pier columns with commercial bituminous patching material.

**G. Macadam Stone Slope Protection.**

**1.** Compact and shape bridge berm foreslope to the dimensions shown in the contract documents. Berm foreslope shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric. If fabric is lapped, laps shall be a minimum of 1 foot (0.3 m) in width, with the up slope lap on top and stapled for continuity.

**3.** Place and compact porous backfill or granular subbase at front face of abutment footing as shown in the contract documents.

**4.** Deposit, spread, consolidate, and shape macadam stone by mechanical or hand methods that provide uniform depth and density and provide uniform surface appearance.

**H. Bridge Wing Armoring.**

**1.** Compact and shape area to receive armoring to the dimensions shown in the contract documents. Area shall be firm prior to placement of engineering fabric.

**2.** Place engineering fabric.

3. When required, place treated timber edging and secure with steel pins or rebar as shown in the contract documents.

**4.** Deposit, spread, consolidate, and shape macadam stone or erosion stone, as specified, by mechanical or hand methods that provide uniform depth and density and provide uniform surface appearance.

**2507.04, Method of Measurement.**

**Add** the Article:

**F.** Slope Protection, of the type specified, and Bridge Wing Armoring, of the type specified: computed in square yards (square meters) from measurements of the surface as constructed to the nearest 0.1 foot (0.1 m).

**2507.05, Basis of Payment.**

**Add** the Article:

**D.** Payment for Slope Protection, of the type specified, and Bridge Wing Armoring, of the type specified, will be at the contract unit price per square yard (square meter).

**1.** Payment for Concrete Slope Protection is full compensation for material and labor required to construct concrete slope protection as shown in the contract documents, including:

- Excavation, shaping and compaction,
- Engineering fabric,
- Granular subbase,
- Class C Structural Concrete,
- Reinforcing steel,
- Preformed joint filler, and
- Commercial bituminous patching material.

**2.** Payment for Macadam Stone Slope Protection is full compensation for material and labor required to construct the macadam stone slope protection as shown in the contract documents, including:

- Excavation, shaping and compaction,
- Engineering fabric,
- Treated timber edging (including steel pins or rebar),
- Porous backfill or granular subbase, and
- Macadam stone.

**3.** Payment for Bridge Wing Armoring, of the type specified, is full compensation for material and labor required to construct the bridge wing armoring as shown in the contract documents, including:

- Excavation, shaping, and compaction.
- Engineering fabric,
- Treated timber edging (including steel pins or rebar) (when required), and
- Macadam stone or erosion stone, as specified.

**4.** Disposal of excess soil from shaping or trenching shall be incidental.

**5.** When erosion control work has previously been completed, Contractor shall be responsible for plant materials destroyed adjacent to slope protection. Contractor shall replant, reseed, and remulch all areas in accordance with Section 2601 at no cost to the Contracting Authority.

**Comments:** Added specifications from detail sheets for concrete and macadam stone slope protection and bridge wing armoring to Section 2507, including materials, construction, MOM, and BOP. Should engineering fabric be included, since we pay for engineering fabric under revetment?

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'.Use ~~Strikeout~~ and Highlight.**

**2301.01 DESCRIPTION.**

A single course of PCC pavement of the type and class specified in the contract. If the class of concrete is not specified, Class C concrete shall be used.

**A. Standard Concrete Pavement.**

Standard concrete pavement may be reinforced or non-reinforced. Use the class of concrete specified in the contract documents. Reinforce as shown in the contract documents. Place within fixed forms, consolidate, and finish by equipment operating on forms.

**B. Slip Form Pavement.**

Slip form pavement may be reinforced or non-reinforced concrete of the class specified in the contract documents. Reinforce as shown in the contract documents. Place, consolidate, and finish without the use of fixed forms.

**C. Concrete Slope Protection.**

For Concrete Slope Protection, the requirements including Method of Measurement and Basis of Payment are specified in the plans.

**2401.01 DESCRIPTION.**

**A.** Remove all portions of an existing structure from the project, except the portions that may be required or permitted to be left in place.

**B.** Unless provided otherwise, all structures or parts of structures to be removed become the Contractor's property.

**C.** For removal of Concrete Slope Protection, the requirements including Method of Measurement and Basis of Payment are specified in the plans.

**2507.01 DESCRIPTION.**

**A.** Place a layer of stone or concrete for protection of earth slopes against erosion from stream flow or wave action. Place according to the contract documents for the class of revetment specified. When specified, place a filter course beneath the revetment.

**B.** When specified furnish, transport, and place concrete grout within the voids of rock revetment as shown in the contract documents. The intent is to fill the voids of the revetment rock placement without over consolidation.

| | | | | | |
|---|---|---|---|---|---|
| **C.** For Macadam Stone Slope Protection and Bridge Wing Armoring, the requirements including Method of Measurement and Basis of Payment are specified in the plans. | | | | | |
| **Reason for Revision:** The plans for Concrete Slope Protection currently have notes specifying the materials and construction requirements. Basis of Payment is also included and Method of Measurement will be added to the plan notes. The bid item currently references 2601 which does not pertain to this type of work and will be changed to 2301. This specification revision provides clarity that the specification requirements are in the plan notes.<br>The plans for removal of Concrete Slope Protection currently have notes specifying the removal requirements. The Method of Measurement and Basis of Payment are also included in the plan notes. This specification revision provides clarity that the specification requirements are in the plans.<br>The plans for Macadam Stone Slope Protection and Bridge Wing Armoring currently have notes specifying the materials and construction requirements. Basis of Payment is also included and Method of Measurement will be added to the plan notes. The bid item currently references 2601 which does not pertain to this type of work and will be changed to 2507. This specification revision provides clarity that the specification requirements are in the plan notes. | | | | | |
| **County or City Input Needed (X one)** | | | **Yes** | **No** | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Kevin Merryman | **Office:** Construction | **Item 12** |
| **Submittal Date:** October 31, 2013 | **Proposed Effective Date:** April 2014 | |
| **Section No.:** 2526<br>**Title:** Construction Survey | **Other:** | |

**Specification Committee Action:** Approved with grammatical changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** "Take" was changed to "obtain" throughout the specification revision.

**Specification Section Recommended Text:**

**2526.03, A, 9, a, General**

**Replace** the Article:

**1)** ~~Take elevations of pavement centerline and both edges at bridges and existing pavement at 10 foot (3 m) intervals for 100 feet (30 m). Adjust profile grade to provide a smooth transition, and submit final elevations to the Engineer for approval.~~ Obtain elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Obtain elevations at maximum 10 foot (3 m) intervals for a minimum of 100 feet (30 m). Adjust design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**2)** When a new profile grade is not included in the contract documents:

**a)** Obtain elevations of the existing ~~shoulders and/or~~ pavement and bridges at 100 foot (30 m) intervals on straight and level sections and 50 foot (10 m) intervals on horizontal and vertical curves.

**b)** Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line ~~based on these elevations~~ to provide the required pavement or shoulder thickness as detailed in the contract documents. ~~This grade line shall tie into existing bridges, adjacent pavement and ramps, and provide the required pavement crown. Submit this proposed grade line to the Engineer for approval.~~ Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**2526.03, A, 11, a, General.**

**Replace** Articles 1 and 2:

**1)** ~~Take elevations of pavement centerline and both edges at bridges and existing pavement at 10 foot (3 m) intervals for 100 feet (30 m). Adjust profile grade to provide a smooth transition, and submit final elevations to the Engineer for approval.~~ Obtain elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Obtain elevations at maximum 10 foot (3 m) intervals for a minimum of 100 feet (30 m). Adjust design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**2)** When a new profile grade is not included in the contract documents:

**a)** Obtain elevations of adjacent pavement and bridges per Article 2526.03, A, 11, a, 1.

~~**a**~~ **b)** Obtain elevations of existing pavement at centerline and both pavement edges for bonded overlays and projects including mainline stress relief course and/or pavement scarification.

~~**b**~~ **c)** Obtain elevations of existing pavement at centerline, quarter points, and both pavement edges for unbonded overlays and whitetopping projects when a stress relief course and/or pavement scarification are not included.

~~**c**~~ **d)** Obtain elevations at maximum 50 foot (10 m) intervals on straight and level sections and at maximum 25 foot (10 m) intervals on horizontal and vertical curves.

~~**d**~~ **e)** ~~Design a smooth profile grade line based on these elevations to provide the required pavement or shoulder thickness as detailed in the contract documents. This grade line shall tie into existing~~

~~bridges, adjacent pavement and ramps, and provide the required pavement crown. This proposed grade line shall be submitted to the Engineer for approval.~~ Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line to provide the required pavement or shoulder thickness as detailed in the contract documents. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**Comments:** "Take" vs. "obtain"?

**Member's Requested Change (Redline/Strikeout):**

**2526.03 SURVEY.**

**A.**

**9. Pavements (PCC & HMA).**

**a. General**.

**1)** ~~Take elevations of pavement centerline and both edges at bridges and existing pavement at 10 foot (3 m) intervals for 100 feet (30 m). Adjust profile grade to provide a smooth transition, and submit final elevations to the Engineer for approval.~~ Take elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Take elevations at maximum 10 foot (3 m) intervals for a minimum of 100 feet (30 m). Adjust the design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**2)** When a new profile grade is not included in the contract documents:

**a)** Obtain elevations of the existing ~~shoulders and/or~~ pavement and bridges as stated in Article 2526.03, A, 9, a, 1.

**b)** Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line ~~based on these elevations~~ to provide the required pavement or shoulder thickness as detailed in the contract documents. ~~This grade line shall tie into existing bridges, adjacent pavement and ramps, and provide the required pavement crown. Submit this proposed grade line to the Engineer for approval.~~ Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**10. HMA Overlays**

**a.** Reference and preserve existing control points located at each Point of Intersection (P.I.).

**b.** Obtain the Engineer's approval for the method used to reference points.

**c.** Reset Control Points after the work is complete.

**11. PCC Overlays**

**a. General.**

**1)** ~~Take elevations of pavement centerline and both edges at bridges and existing pavement at 10 foot (3 m) intervals for 100 feet (30 m). Adjust profile grade to provide a smooth transition, and submit final elevations to the Engineer for approval.~~ Take elevations of adjacent pavement and bridges at centerline, edge of pavement, and other locations necessary to characterize existing profile and cross slope. Take elevations at maximum 10 foot (3 m) intervals for a minimum of 100 feet (30 m). Adjust the design profile grade and cross slope to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**2)** When a new profile grade is not included in the contract documents:

**a)** Obtain elevations of adjacent pavement and bridges per Article 2526.03, A., 11, a., 1)

**a)** Obtain elevations of existing pavement at centerline and both pavement edges for bonded overlays and projects including mainline stress relief course and/or pavement scarification.

**b)** Obtain elevations of existing pavement at centerline, quarter points, and both pavement edges for unbonded overlays and whitetopping projects when a stress relief course and/or pavement scarification are not included.

**c)** Obtain elevations at maximum 50 foot (10 m) intervals on straight and level sections and at

maximum 25 foot (10 m) intervals on horizontal and vertical curves.

**d)** ~~Design a smooth profile grade line based on these elevations to provide the required pavement or shoulder thickness as detailed in the contract documents. This grade line shall tie into existing bridges, adjacent pavement and ramps, and provide the required pavement crown. This proposed grade line shall be submitted to the Engineer for approval.~~ Using these elevations, design a profile grade and cross slopes to provide a smooth transition, free of bumps and dips, from the new pavement to the existing pavement or bridge. Design a smooth profile grade line to provide the required pavement or shoulder thickness as detailed in the contract documents. Notify the Engineer when a smooth profile cannot be provided. Submit final elevations to the Engineer.

**3)** Reference and preserve existing control points located at each Point of Intersection (P.I.).

**4)** Obtain Engineer's approval for method used to reference points.

**5)** Reset Control Points after work is complete.

**Reason for Revision:** The proposed changes are intended to clarify survey responsibilities with regard to shots taken of existing pavement and the design of profile transitions with adjacent pavement and bridges. The changes now place responsibility on the contractor to adjust profile grades to provide a smooth transition and notify the Engineer if a smooth transition cannot be provided.

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|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** Both AGC and ICPA were notified and support the change. | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Willy Sorenson / Dan Sprengeler | **Office:** Traffic and Safety | **Item 13** |
| **Submittal Date:** 2013.10.23 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2528.03, C<br>**Title:** Channelizing Devices (Traffic Control) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** Dan Sprengeler or Mark Bortle will notify the industry of this change.

The Office of Traffic and Safety explained that the old markers could be cut-off and re-used, that is why we allowed them to go down to 28 inches. The new markers are not able to be re-used that way.

A committee member asked if we should phase in this change. The Office of Traffic and Safety explained that tubular markers are replaced often and are not re-used for multiple projects. Any projects let before April will still use the old length of markers.

The Office of Local Systems asked what "nominal" means in this case. The committee decided that the Engineer will be able to allow markers that are not quite 36 inches that would not meet the specification without "nominal".

**Specification Section Recommended Text:**

**2528.03, C, 1, b, 3, a.**

**Replace** the Article:

~~Between 28 inches (710 mm) and 34 inches (865 mm) in height.~~ A nominal 36 inch (915 mm) height.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**Channelizing Devices.**

**1.** Use Channelizing Devices that are of the type shown in the contract documents. Use reflective sheeting meeting the requirements of Article 4186.03.

**a. Barricades.**

**1)** A 2 foot (0.6 m) minimum length barricade may be used when Type I or Type II Barricades are furnished as one of the options for channelizing devices in lieu of vertical panels, 42 inch (1050 mm) channelizers, cones, or drums.

**2)** Ensure Type III barricades have a minimum length of rail of 6 feet (1.8 m). When traffic is permitted in each direction around a Type III Barricade, ensure the Type III Barricade used has fully reflectorized faces on both sides of the rails.

**3)** Erect barricades in essentially a horizontal position perpendicular to the direction of approaching traffic. Ballast them so as not to cover any striped rail.

**b. Cones, Vertical Panels, 42 Inch (1050 mm) Channelizers, Drums, and Tubular Markers.**

**1)** Ensure cones, vertical panels, 42 inch (1050 mm) channelizers, drums, and tubular markers meet the current requirements of the MUTCD, and Section 4188.

**2)** When used to separate two way traffic, separate temporary no passing lines approximately 16 inches (400 mm), with the marker to be installed between these lines.

**3)** Ensure tubular markers meet the following:

**a)** A nominal 36-inch (915 mm) height. ~~Between 28 inches (710 mm) and 34 inches (865 mm) in height.~~

**b)** Diameter facing traffic at least 2 inches (50 mm) in width.

**c)** Completely faced with reflectorized white and orange sheeting that is in two bands 4 inches (100 m) wide with 6 inches (150 mm) between bands, with the top band no more than 2 inches (50 mm) from the top of the tubular marker.

**4)** Cones may be used as channelizing devices in tapers and along lane lines during daylight

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| hours only.<br>**5)** 42 inch (1050 mm) channelizers may be used in place of drums in work areas remaining in place for up to three days. Spacing of channelizers shall be half the spacing required for drums or double the number of drums required. | | | | | |
| **Reason for Revision:** 36-inch height for tubular markers is common among many SHA's. The Work Zone Traffic Safety Committee recommended the specification be changed to improve the visibility of the tubular markers when used for centerline delineation, especially on two lane, two way operations. | | | | | |
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** X | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Tom Reis / Mark Callahan | **Office:** Specifications / District 2 | **Item 14** |
| **Submittal Date:** 2013.11.06 | **Proposed Effective Date:** April 2014 | |
| **Article No.:** 2544.04, A<br>**Title:** Cleaning and Filling Cracks for HMA Surfaces | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2544.04, A, 1, a.**

**Replace** the Article:

Miles (kilometers), calculated to the nearest 0.1 mile (0.1 km), of main line pavement, including shoulders 4 feet (1.2 m) wide or less, on which cracks were cleaned and filled. Calculations will be based on the center line distance of main line, two-lane pavement, corrected for main line pavement of more than two lanes, including climbing lanes.

**2544.04. A. 2, a.**

**Replace** the Article:

Miles (kilometers), calculated to the nearest 0.1 mile (0.1 km), of paved shoulders greater than 4 feet (1.2 m) in width, on which cracks were cleaned and filled. Calculations will be based on the center line distance of the adjacent main line pavement, a single measurement for shoulders on both sides of the pavement.

**Comments:**

**Member's Requested Change (Redline/Strikeout):**

**Reason for Revision:** To update specifications for 'Cleaning and Filling Cracks for HMA Surfaces' to mirror specifications for 'Crack and Joint Cleaning and Sealing (HMA Surfaces).'

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| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |

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| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** X | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Brian Smith / Mike Heller | **Office:** Design | **Item 15** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** 4/15/2014 | |
| **Article No.:** 2601.03, A, 11<br>**Title:** Native Grass Seed Drill | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2601.03. A, 11, Native Grass Seed Drill.**

**Replace** the article:

Use a drill ~~designed to provide uniform distribution of native grass and wildflower seeds. Provide separate seed boxes to apply both small seeds as well as fluffy bearded seeds. If a no till attachment is specified, use an attachment manufactured by the same manufacturer as the drill.~~ that:

- Is free of soil and seed when it arrives on the project.
- Accurately meters and uniformly mixes various seed types throughout drilling operation.
- Provides separate seed boxes to apply both small seeds and a large box with an aggressive picker wheel for continual mixing and applying fluffy bearded seed.
- Has disc furrow openers and packer assembly wheels that compact soil directly over drill rows.
- Contains a no till attachment manufactured by same manufacturer as the drill.
- Has dimensions to ensure it maintains uniform soil contact over seeded area without bridging.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**2601.03. A, 11, Native Grass Seed Drill.**

**Replace** the article:

Use a drill ~~designed to provide uniform distribution of native grass and wildflower seeds. Provide separate seed boxes to apply both small seeds as well as fluffy bearded seeds. If a no till attachment is specified, use an attachment manufactured by the same manufacturer as the drill.~~that:

- Is free of soil and seed when it arrives on the project site.
- Accurately meters and uniformly mixes various seed types throughout the drilling operation.
- Provides separate seed boxes to apply both small seeds as well as a large box with an aggressive picker wheel for continual mixing and applying fluffy bearded seed.
- Has disc furrow openers and packer assembly wheels that compact the soil directly over the drill rows.
- Contains a no till attachment manufactured by the same manufacturer as the drill.
- Has dimensions to ensure it maintains uniform soil contact over the seeded area without bridging.

**Reason for Revision:** Provide more information regarding native grass seed drills. Roadside development has been including information as plan notes.

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| **County or City Input Needed (X one)** | **Yes** | **No** X |

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| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Brian Smith / Mike Heller | **Office:** Design | **Item 16** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** 4/15/2014 | |
| **Article No.:** 2601.03, B, 4, a, 3<br>**Title:** Seedbed Preparation | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Design explained that disking weeds into the ground can promote future seed growth.

**Specification Section Recommended Text:**

**2601.03, B, 4, a, 3.**

**Replace** the Article:

~~Where weed growth has developed extensively, weeds may be disked into the ground. If weed growth develops sufficiently to interfere with proper seedbed preparation, mow weeds and remove them from project (at no additional cost to Contracting Authority).~~ Where enough vegetative growth exists to sufficiently interfere with proper seedbed preparation, mow vegetative growth before seeding, at no additional cost to the Contracting Authority.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**2601.03, B, 4, a, 3, Seedbed Preparation.**

**Replace** the article:

**3)** ~~Where weed growth has developed extensively, weeds may be disked into the ground. If weed growth develops sufficiently to interfere with proper seedbed preparation, mow weeds and remove them from project (at no additional cost to Contracting Authority).~~Where enough vegetative growth exists to sufficiently interfere with proper seedbed preparation, mow the vegetative growth before seeding, at no additional cost to the Contracting Authority.

**Reason for Revision:** To address situations where vegetation other than just weeds interferes with seedbed preparation.

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| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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| **Submitted by:** Brian Smith / Mike Heller | **Office:** Design | **Item 17** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** 4/15/2014 | |
| **Article No.:** 2601.03, C, 5<br>**Title:** Native Grass Seeding | **Other:** | |

**Specification Committee Action:** Approved as recommended.

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| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** None.

**Specification Section Recommended Text:**

**2601.03, C, 5, a, Preparation and Application.**

**Add** the Articles:

**4)** Calibrate native grass seed drill to specified seeding rate for the project prior to operation at the project.

**5)** Plant seed at a maximum 1/8 inch (3 mm) depth. Do not perform seeding when wet soil conditions would cause seed to be placed deeper than specified.

**6)** Fill seed boxes loosely without packing seed to allow agitator wheels to run freely and seed flows freely through drill.

**7)** Set no-till coulters to penetrate between 1/4 and 1/2 inch (6 and 13 mm) below soil surface.

**8)** Operate drill so the drive wheel maintains ground contact. Perform two passes with drill, with second pass being offset from first pass.

**9)** Operate tractor between 3 and 5 mph (5 and 8 kmph) to prevent drill from bouncing.

**10)** Remove seed remaining in drill at the end of each day. At the completion of seeding, remove remaining seed from drill by vacuum or other means. Hand broadcast remaining seed on project.

**2601.03, C, 5, d, Application Dates.**

**Replace** the Article:

Normal seed application dates are April 1 through ~~June 30~~ May 31 and November 1 until ground conditions are unsuitable for seeding due to moisture or frost.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**2601.03, C, 5, a, Preparation and Application.**

**Add** as new articles:

**4)** Calibrate the native grass seed drill to the specified seeding rate for the project prior to operation at the project site.

**5)** Plant seed at a maximum 1/8 inch (32 mm) depth. Do not perform seeding when wet soil conditions would cause the seed to be placed deeper than specified.

**6)** Fill seed boxes loosely without packing seed to allow agitator wheels to run freely and the seed flows freely through the drill.

**7)** Set the no-till coulters to penetrate between 1/4 and 1/2 inch (64 and 127 mm) below the soil surface.

**8)** Operate the drill so that the drive wheel maintains ground contact at all times. Perform two passes with the drill, with the second pass being offset from the first pass.

**9)** Operate the tractor between 3 to 5 mph to prevent the drill from bouncing.

**10)** Remove any seed remaining in the drill at the end of each day. At the completion of all seeding, remove remaining seed from the drill by vacuum of other means. Hand broadcast remaining seed on the project.

**2601.03, C, 5, d, Application Dates.**

**Replace** the article:

Normal seed application dates are April 1 through ~~June 30~~May 31 and November 1 until ground conditions are unsuitable for seeding due to moisture or frost.

**Reason for Revision:** Modifies the spring seeding date and provides a dormant seeding date for native grass seeding.

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| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Brian Smith | **Office:** Design | **Item 18** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** 4/15/2014 | |
| **Section No.:** 2602<br>**Title:** Water Pollution Control (Soil Erosion) | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Office of Construction and Materials asked if we should allow the option to use rock instead of Class 10 material and topsoil. The Office of Design preferred soil for future maintenance purposes, i.e. mowing and the assumed lower cost of Class 10 material and topsoil that could be available on site.

**Specification Section Recommended Text:**

**2602.03, Construction.**

**Add** the Article**:**

**N. Removal of Silt Basins.**

Fill silt basin with Class 10 material and a minimum of 4 inches (100 mm) of topsoil. Furnish Class 10 material according to Section 2107 and compact by driving over a minimum of two times. Furnish and place topsoil according to Section 2105. Smooth surface of topsoil and leave in a finished condition that drains properly.

**2602.04, G, Removal of Silt Basins.**

**Replace** the article:

~~Cubic yards (cubic meters) as Class 10 Excavation according to Article 2102.04 for material used to fill silt basins.~~ By count for each silt basin removed.

**2602.05, A, 7, Removal of Silt Basins.**

**Replace** the Article:

~~Per cubic yard (cubic meter) for Class 10 Excavation, according to Article 2102.05, for each silt basin properly.~~ Each. Payment is full compensation for providing, preparing, transporting, and placing Class 10 material and topsoil. Contractor has the option, at no additional cost to the Contracting Authority, of stripping and stockpiling Class 10 material and topsoil from constructing silt basins for later use in silt basin removal. Overhaul will not be paid for this item.

**Comments:**

**Member's Requested Change: (Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**2602.03, N, Removal of Silt Basins.**

**Add** as a new article**:**

Fill the silt basin with Class 10 material and a minimum of 4 inches of topsoil. Furnish Class 10 material according to Section 2107 and compact the material by driving over the material a minimum of two times. Furnish and place topsoil according to Section 2105. Smooth the surface of the topsoil and leave in a finished condition so it will drain properly.

**2602.04, G, Removal of Silt Basins.**

**Replace** the article:

~~Cubic yards (cubic meters) as Class 10 Excavation according to Article 2102.04 for material used to fill silt basins~~By count for each silt basin removed.

**2602.05, A, 7, Removal of Silt Basins.**

**Replace** the article:

~~Per cubic yard (cubic meter) for Class 10 Excavation, according to Article 2102.05, for each silt basin properly~~Each. Payment is full compensation for providing, preparing, transporting, and placing the Class 10 material and topsoil. The Contractor has the option, at no additional cost to the Contracting Authority, of stripping and stockpiling the Class 10 material and topsoil from constructing silt basins for later use in silt basin removal. Overhaul will not be paid for this item.

**Reason for Revision:** Provide contractors with instructions for silt basin removal. Revise MOM and BOP.

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| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** X | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Brian Smith / Mike Heller | **Office:** Design | **Item 19** |
| **Submittal Date:** 2013.11.04 | **Proposed Effective Date:** 4/15/ 2014 | |
| **Article No.:** 4169.07, A<br>**Title:** Straw Mulch | **Other:** | |

**Specification Committee Action:** Approved as recommended.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See Specification Section Recommended Text.

**Comments:** The Specifications Section asked what the issue was with straw harvested the previous season. The straw deteriorates and does not give the performance of recently harvested straw.

**Specification Section Recommended Text:**

**4169.07, A, Straw Mulch.**

**Add** as the last sentence:

Bail cereal or native grass straw the same growing season as the grain was harvested from the plant.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**4169.07, A, Straw Mulch.**

**Add** as the last sentence:

Bail cereal or native grass straw in the same growing season that the grain is harvested from the plant.

**Reason for Revision:** Creates the requirement that the straw be bailed in the same season that the grain is harvested from the plant.

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| **County or City Input Needed (X one)** | **Yes** | **No** X |
| **Comments:** | | |

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|---|---|---|---|---|---|
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

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|---|---|---|
| **Submitted by:** Brian Smith / Mike Heller | **Office:** Office of Design | **Item 20** |
| **Submittal Date:** 10/25/2013 | **Proposed Effective Date:** 4/15/ 2014 | |
| **Article No.:** 4169.12<br>**Title:** Perimeter and Slope Control Devices | **Other:** | |

**Specification Committee Action:** Approved with changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:**

**4169.12, Perimeter and Slope Control Devices.**

**Replace** the Article:

**A. General.**

**1.** Provide wattles, sediment logs, and filter socks consisting of wood products (including wood mulch), cereal grain straw, or native grass straw contained in a tube of photo degradable fabric or synthetic netting.

**2.** Fill wattles, sediment logs, and filter socks using a mechanical device. Hand filling of wattles, sediment logs, and filter socks will not be allowed.

**3.** Ensure wattles, sediment logs, and filter socks do not contain:

- A visible admixture of refuse or other physical contaminants,
- Germination or growth inhibiting factors, or
- Material toxic to plant growth.

**4.** Ensure wattles, sediment logs, and filter socks have waterproof identification tags printed using permanent ink and containing manufacturer's name and address. For wattles and sediment logs, tags shall be attached to the inside of the netting of each wattle or sediment log. For filter socks, tags shall be attached to the outside of each sock.

**5.** Approved perimeter and slope sediment control devices are listed in Materials I.M. 469.10, Appendix E**.**

**~~A~~ B. Wattles and Sediment Logs.**

~~Wood excelsior or straw contained in a tube of photodegradable open weave fabric (synthetic netting).~~

**1.** Ensure cereal grain straw for wattles or sediment logs is Certified Noxious Weed Seed Free Mulch certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations.

**2.** Wattles or sediment logs with observed unharvested seed heads will not be accepted.

**3.** For wood excelsior sediment logs and straw wattles, meet the following minimum weight (mass) requirements:

- 20 inch (510 mm) sediment logs and straw wattles: 3 pounds per foot (4.45 kg/m) with tolerance of 0.25 pounds per foot (0.40 kg/m).
- 12 inch (300 mm) sediment logs and straw wattles: 2 pounds per foot (3.00 kg/m) with tolerance of 0.25 pounds per foot (0.40 kg/m).
- 9 inch (230 mm) sediment logs and straw wattles: 1 pound per foot (1.50 kg/m) with a tolerance of 0.1 pounds per foot (0.15 kg/m).
- 6 inch (150 mm) sediment logs and straw wattles: 0.5 pounds per foot (0.75 kg/m)

with a tolerance of 0.1 pounds per foot (0.15 kg/m).

~~B~~ C. Filter Socks.

~~Continuous, tubular, knitted photodegradable, synthetic mesh netting~~ Provide filter socks with a maximum 3/8 inch (10 mm) opening and filled with a compost/wood blend filter material consisting of compost from an approved source meeting Article 4169.08. ~~Fill sock by blowing filter material into tube with a pneumatic blower truck or similar device. Hand filling will not be allowed.~~

~~C. Approved perimeter and slope sediment control devices are listed in Materials I.M. 469.10, Appendix E.~~

**Comments:** The Office of Design requested to not eliminate the maximum opening size of filter socks.

**Specification Section Recommended Text:** See Member's original submittal.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**4169.12, Perimeter and Slope Control Devices.**

**Replace** the article:

**A. General.**

**1.** Provide wattles, sediment logs, and filter socks consisting of wood products (including wood mulch), cereal grain straw, or native grass straw contained in a tube of photo degradable fabric or synthetic netting.

**2.** Fill wattles, sediment logs, and filter socks using a mechanical device. Hand filling of wattles, sediment logs, and filter socks will not be allowed.

**3.** Ensure wattles, sediment logs, and filter socks do not contain:

- A visible admixture of refuse or other physical contaminants,
- Germination or growth inhibiting factors, or
- Material toxic to plant growth.

**4.** Ensure wattles, sediment logs, and filter socks have waterproof identification tags printed using permanent ink and containing manufacturer's name and address. For wattles and sediment logs, tags shall be attached to the inside of the netting of each wattle or sediment log. For filter socks, tags shall be attached to the outside of each sock.

**5.** Approved perimeter and slope sediment control devices are listed in Materials I.M. 469.10, Appendix E.

~~A~~ B. Wattles and Sediment Logs.

~~Wood excelsior or straw contained in a tube of photodegradable open weave fabric (synthetic netting).~~

**1.** Ensure cereal grain straw for wattles or sediment logs is Certified Noxious Weed Seed Free Mulch certified by the Iowa Crop Improvement Association or other state's Crop Improvement Associations.

**2.** Wattles or sediment logs with observed unharvested seed heads will not be accepted.

**3.** For wood excelsior sediment logs and straw wattles, meet the following minimum weight (mass) requirements:

- 20 inch (510 mm) sediment logs and straw wattles: 3 pounds per foot (4.45 kg/m)

with tolerance of 0.25 pounds per foot (0.40 kg/m).

- 12 inch (300 mm) sediment logs and straw wattles: 2 pounds per foot (3.00 kg/m) with tolerance of 0.25 pounds per foot (0.40 kg/m).
- 9 inch (230 mm) sediment logs and straw wattles: 1 pound per foot (1.50 kg/m) with a tolerance of 0.1 pounds per foot (0.15 kg/m).
- 6 inch (150 mm) sediment logs and straw wattles: 0.5 pounds per foot (0.75 kg/m) with a tolerance of 0.1 pounds per foot (0.15 kg/m).

~~B~~ **C. Filter Socks.**

~~Continuous, tubular, knitted photodegradable, synthetic mesh netting with a maximum 3/8 inch (10 mm) opening and~~ Provide filter socks filled with a compost/wood blend filter material consisting of compost from an approved source meeting Article 4169.08. ~~Fill sock by blowing filter material into tube with a pneumatic blower truck or similar device. Hand filling will not be allowed.~~

~~**C.** Approved perimeter and slope sediment control devices are listed in Materials I.M. 469.10, Appendix E.~~

**Reason for Revision:** Move information currently contained in Materials I.M. 4169.10, Appendix E into the specs. Creates requirements to ensure that the DOT continues to receive quality sediment control devices.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** X | **No** | **Industry Concurrence:** | **Yes** X | **No** |
| **Comments:** | | | | | |

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 21** |
| **Submittal Date:** 2013.10.25 | **Proposed Effective Date:** January 22, 2014 | |
| **Article No.:**<br>**Title:** | **Other:** DS-12019, Mass Concrete - Control of Heat of Hydration | |

**Specification Committee Action:** Approved with changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See attached Developmental Specifications for Mass Concrete - Control of Heat of Hydration.

**Comments:** The Office of Local Systems asked who the Thermal Control Plan should be submitted to. Engineer was added.

The Office of Bridges and Structures asked if the total number of temperature sensors should be revised since the corner placement was eliminated. This was revised. The depth of the midpoint sensors was also revised to give a range instead of a minimum.

A committee member asked what qualifies a technician to inspect and approve the installation of monitoring devices. The T. C. Engineer will determine that. The language was revised to "their representative".

The Specifications Section asked if the Engineer referred to in the middle of Article 12XXX.03, C, 1, should be the T. C. Engineer. This was revised.

**Specification Section Recommended Text:** See attached Draft Developmental Specifications for Mass Concrete - Control of Heat of Hydration.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'.Use ~~Strikeout~~ and Highlight.**
**Refer to attached DS**

**Reason for Revision:** Several changes are proposed to revise and clarify the requirements based upon questions/issues raised during previous use of this DS.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**DS-12XXX**
**(Replaces DS-12019)**

Iowa Department of Transportation

**DEVELOPMENTAL SPECIFICATIONS**
**FOR**
**MASS CONCRETE – CONTROL OF HEAT OF HYDRATION**

**Effective Date**
**January 22, 2014**

**THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**12XXX.01 DESCRIPTION.**
Produce a structure free of shrinkage cracks that would be a result of heat of hydration during the curing of large concrete cross-sections. Accomplish this through appropriate concrete mix design and management of concrete temperature and temperature differential. Structural mass concrete is defined as any concrete footing with a least dimension greater than 5 feet (1.5 m) or other concrete placements with a least dimension greater than 4 feet (1.2 m). Additional constraints are required on placements with a least dimension greater than 6.5 feet (2 m). This specification does not apply to concrete drilled shafts.

Apply Section 2403 and Division 41 of the Standard Specifications with the following modifications.

**12XXX.02 MATERIALS.**

**A.** Cement shall be Type I/II, IP, or IS.

**B.** Use any combination of Ground Granulated Blast Furnace Slag or Class F fly ash. Class C fly ash may also be used with a maximum substitution of 20%. The maximum total substitution of Portland cement shall not exceed 50%, including the amount in the blended cement.

**C.** Cementitious content shall be a minimum of 560 pounds per cubic yard (332 kg/m$^3$).

**D.** Maximum water to cementitious ratio shall be 0.45.

**E.** Air entrainment shall be used. To improve workability and aid in air entrainment, water reducing or retarding admixtures may be used. A mid range water reducing admixture may be used and the slump shall be increased to six inches maximum.

**12XXX.03 CONSTRUCTION.**

**A. Thermal Control Plan.**
Develop and submit a written Thermal Control Plan to the Engineer describing the procedures that will be used during the period of heat dissipation following concrete placement, so the temperature differential between the interior of the section and the outside surface of the section does not exceed the restrictions in Article 12XXX.03, B. Submit the Thermal Control Plan at least 30 calendar days before the first intended structural mass concrete placement.

Compliance with this specification may result in long cooling times. Consider options to control heat of hydration that are compatible with their desired construction schedule and erection procedures.

Do not place concrete covered by this specification until the Thermal Control Plan has received written approval by the Engineer and equipment and materials necessary to facilitate the plan are on site and ready for use. Provide and install temperature sensing devices according to Article 12XXX.03, B, 3.

The location of construction joints shall be as shown in the plans.

For mass concrete placements with a least dimension of less than or equal to 6.5 feet (2 m) the Thermal Control Plan procedures may include, but are not limited to, the following:

- Cooling component materials prior to addition to the mix to reduce the temperature of the concrete while in its plastic state.
- Adding ice to the mix water.
- Sprinkle coarse aggregate with water or wet the stockpile.
- Controlling rate of concrete placement (low lifts).
- Insulating the forms and the surface of the concrete to prevent temperature differential.
- Placing concrete at times of day when the ambient temperature is lowest (in summer) or highest (in winter).
- Other acceptable methods that may be developed by the Contractor and approved in writing by the Engineer.

For mass concrete placements with a least dimension of greater than 6.5 feet (2 m), the Thermal Control Plan shall be developed by a Professional Engineer, licensed in the State of Iowa and competent in the modeling, design, and temperature control of concrete in mass elements (T. C. Engineer). The T. C. Engineer shall submit a list containing at least three mass concrete projects, of similar dimension and thermal control requirements to those shown on the plans, completed in the last three years. In the list of projects include names and phone numbers of owner's representatives who can verify the T. C. Engineer's participation on those projects. The T. C. Engineer shall follow the procedure outlined in Section 207.4R-05 of the ACI Manual of Cooling and Insulating Systems for Mass Concrete to formulate, implement, administer, and monitor a temperature control plan, making adjustments as necessary to ensure compliance with the Contract Documents.

The Thermal Control Plan shall include, but not be limited to the following:

**1.** Based on the concrete mix design, determine by lab testing the adiabatic heat generation for the concrete mix to be used.

**2.** Proposed methods to achieve required concrete temperature and control concrete temperature differential through concrete mix design and construction practices for temperature control to prevent thermal cracking.

**3.** Design of a cooling system consisting of non-corrosive piping to be embedded in the structural mass concrete for all mass concrete placements that are below water level within the limits of the river.

**4.** Provide information on the temperature sensing and recording equipment to be used and details of installation locations of the temperature probes for each planned mass concrete placement.

**5.** Mass concrete placement plan to ensure prevention of concrete cold joints.

**6.** Monitoring Plan to control temperature gradient.

**B. Thermal Control.**

**1. Concrete Temperature Limits.**
Maximum concrete temperature at time of placement shall not exceed 70ºF (21°C) and shall not be less than 40ºF (4°C). The maximum concrete temperature during the period of heat dissipation shall not exceed 160ºF (71°C).

**2. Temperature Differential Restrictions**
The temperature differential between the interior of the section and the outside surface of the section shall not exceed the limits in the following table for placements with least dimensions of 6.5 feet (2 m) or less):

| Hours after placement | Maximum temperature differential °F (°C) |
|---|---|
| 0-24 | 20 (11.1) |
| 24-48 | 30 (16.7) |
| 48-72 | 40 (22.2) |
| >72 | 50 (27.8) |

Thermal control of each placement shall be maintained until the temperature of the interior is within 50ºF (27.8°C) of the average outside air temperature. The average outside air temperature shall be determined by averaging the daily high and low temperatures over the preceding seven calendar days.

**3. Temperature Sensing and Recording**
For each placement of structural mass concrete, two temperature sensors shall be installed at each of the following locations (for a total of ~~ten~~ eight temperature sensors):

- Center of the placement,
- Midpoint of the side which is the shortest distance from the center (~~minimum~~ 2 inch (50 mm) to 4 inch (100 mm) cover),
- Midpoint of the top surface (~~minimum~~ 2 inch (50 mm) to 4 inch (100 mm) cover), and
- ~~corner of the placement which is furthest distance from the center (minimum 2 inch (50 mm) cover), and~~
- Air temperature.

The purpose for two sensors at each location is to provide a primary and secondary backup.

Temperatures shall be electronically recorded automatically by an approved recorder furnished by the Contractor and shall be capable of continuously recording a minimum of one reading per hour for the duration of the mass concrete temperature monitoring period. Sensors and recorder shall be accurate to within +/- 2ºF (1.1°C) in the temperature range of 32ºF (0°C) to ~~212ºF (100°C)~~ 185ºF (85ºC). Provide a backup temperature sensing system, which shall include both backup temperature sensors and backup temperature readout device. Back-up system is intended to be used to complete the monitoring of a placement should the primary system fail. Primary system shall be repaired or replaced before the commencement of the next placement.

**C. Production Concrete.**

**1.** The T. C. Engineer or ~~qualified technician employed by the T. C. Engineer,~~ their representative shall inspect and approve the installation of monitoring devices and verify the process for recording temperature data is effective for the first placement of each size and type mass component. Qualifications of all technicians employed to inspect or monitor mass concrete placements shall be submitted to the Engineer for approval. For placements other than the first, an employee, approved by the T. C. Engineer as qualified to inspect monitor device installation, shall be designated to: 1) review temperature data, 2) be in contact at all

times with the T. C. Engineer if adjustments must be made as a result of the temperature differential being exceeded, and 3) immediately implement adjustments to temperature control measures as directed by the T. C. Engineer. Recorded temperature data shall be reviewed at intervals of no greater than 4 hours. Recording of temperature data shall begin when the mass concrete placement is complete and shall continue until the maximum temperature differential (not maximum temperature) is reached and a decreasing temperature differential is confirmed as defined in the Thermal Control Plan. If conditions change, such as a drop in the ambient temperature or a change in insulation which would result in an increase in the temperature differential, the recording of temperature data shall be resumed. A copy of all recorded temperature data shall be furnished to the Engineer as they are determined, and a final report shall be furnished within 3 days of completion of monitoring of each element.

Only use approved mixes for production concrete.

**2.** If the temperature differential within any structural mass concrete placement exceeds the limits in Article 12XXX.03, B , immediate corrective action as directed by the Contractor or the T. C. Engineer shall be taken, future placement of structural mass concrete will be suspended, and a revised Thermal Control Plan shall be submitted to the Engineer for approval. Do not resume placement of mass concrete without written approval from the Engineer.

When mass concrete temperature differentials are exceeded, all analyses and test results deemed necessary by the Engineer shall be provided for determining the structural integrity and durability of the mass concrete element, to the satisfaction of the Engineer. The analyses and/or test results shall be provided at no additional cost to the Contracting Authority and without additional time to be granted.

Based on the analyses and test results, a determination of corrective action will be made by the Engineer which may include, but not be limited to, price adjustment, epoxy injection of thermal cracks, a combination of both, or removal of the non-complying concrete.

**12XXX.04 METHOD OF MEASUREMENT.**
None.

**12XXX.05 BASIS OF PAYMENT.**
Costs for complying with this specification shall be considered incidental to the contract unit price for structural concrete.

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Greg Mulder / Wayne Sunday | **Office:** Construction & Materials | **Item 22** |
| **Submittal Date:** October 25, 2013 | **Proposed Effective Date:** April 15, 2014 | |
| **Article No.:**<br>**Title:** | **Other:** DS-12028, Floating Silt Curtain | |

**Specification Committee Action:** Approved with changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 2/18/2014 |

**Specification Committee Approved Text:** See attached draft Developmental Specifications for Floating Silt Curtain.

**Comments:** The effective date was changed to February 18, 2014 since we are adding a bid item for Maintenance of Floating Silt Curtain.

The Office of Construction and Materials pointed out that the curtain material comes in 50 foot sections, so maintenance will be paid in lineal feet by the section maintained, which will typically be 50 feet, but could be less on the ends of the installation.

The Office of Construction and Materials made some changes to restore some language from the original DS that had been removed.

The Office of Construction and Materials requested to add language that the Contractor will be paid material cost for replacing lost or damaged silt curtain in addition to the Maintenance bid item for the labor.

**Specification Section Recommended Text:** See attached draft Developmental Specifications for Floating Silt Curtain.

**Comments:** I don't think replacement of lost or damaged floating silt curtain should be considered maintenance. If installation was done according to specification and a storm or vandal damages the curtain so badly it has to be replaced, or it is stolen or washed away, the Contractor cannot bid to cover that.

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'.Use ~~Strikeout~~ and Highlight.**

**Refer to attached DS-12028**

**Reason for Revision:** Revisions were made to the floating silt curtain material requirements to eliminate restrictions to some suppliers that were not previously recognized. Installation of floating silt curtain (containment) was more clearly defined to ensure an effective installation. Anchor weight and spacing were revised to provide better retention of the installations. Maintenance of floating silt curtain (hanging & containment) was added to cover repairs, realignment, and replacement/reinstallation as directed by the Engineer. This will require establishment of a bid item.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**Draft DS-12XXX**
**(Replaces DS-12028)**

Iowa Department of Transportation

**DEVELOPMENTAL SPECIFICATIONS**
**FOR**
**FLOATING SILT CURTAIN**

**Effective Date**
**February 18, 2014**

**THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

## 12XXX.01 DESCRIPTION.

Floating Silt Curtains are temporary control measures used for containing suspended sediment in an area of open water. Open water is described as any perennial water course or water body with 6 inch (150 mm) or greater depth. Floating Silt Curtains consist of fabric fastened to a flotation carrier and weighted along the bottom edge. Two types of Floating Silt Curtains may be utilized:

**A. Floating Silt Curtain (Containment).**
Floating Silt Curtain (Containment) is intended to capture all sediment entering the water during construction activities and the sediment is to be ~~completely~~ removed with the floating silt curtain upon completion of the work.

**B. Floating Silt Curtain (Hanging).**
Floating Silt Curtain (Hanging) is intended to create a static water area isolated from the water course or water body. Sediment entering the static water area is isolated and settles out of suspension within the area of the floating silt curtain.

## 12XXX.02 MATERIALS.

**A.** Floating Silt Curtains shall meet the following minimum requirements and manufacturer recommendations:

**Table DS-12XXX.02-1: Floating Silt Curtain Requirements**

| Property | Value |
|---|---|
| Curtain Fabric Material Type | Impermeable vinyl-coated nylon |
| Mass Per Square Yard ($m^2$) | 22 oz. (0.75 kg) |
| Grab Tensile Strength ASTM D 4632 * | 500 lbs. (2.2 kN) |
| Flotation | 8 inch (200 mm) diameter marine quality expanded polystyrene |
| Net Buoyancy, Per Foot (m) | 20 lbs. (300 N) |
| Top Load Carrying Components | Fabric plus 5/16 inch (8 mm) galvanized steel cable ~~9800~~ 9100 lbs. (40 kN) minimum break strength |
| Ballast, Lbs. Per Foot (Kg/m), Minimum | ~~1.1~~ 1.0 lbs./foot (~~1.6~~ 1.5 kg/m) enclosed 5/16 inch (8 mm) galvanized chain |
| Connection Between Sections | Aluminum collar reinforced quick disconnects |

* Minimum average roll value.

**B.** Design connecting devices to prevent silt from permeating through the connection and at specified strength to prevent ripping out.

## 12XXX.03 CONSTRUCTION.

### A. General.

**1.** Construct Floating Silt Curtain as shown in the contract documents and to the expected water depth plus wave height.

**2.** On U.S. Coast Guard regulated waters or other navigable waterways, furnish buoys to mark the ends and special areas for visibility. Place buoys as required for navigational purposes.

**3.** Floating Silt Curtain shall be installed adjacent to planned work area prior to soil disturbance. The curtain shall be installed along the complete work area which is planned to be disturbed and to points 20 feet (6 m) beyond the limits of the area of disturbance and tied into the existing soil bank.

**4.** Floating Silt Curtain (Containment) installations will require both a containment floating silt curtain and a hanging floating silt curtain. Install the two floating silt curtains as shown in the contract documents with the containment silt curtain closest to shore and the hanging silt curtain 10 feet (6 m) outside the containment silt curtain.

**5.** Do not discharge water pumped from the work site into an area of unrestrained open water.

**6.** Control surface drainage prior to entry into the water by installation of appropriate erosion control measures on land.

### B. Floating Silt Curtain (Containment).

**1.** Install Floating Silt Curtain (hanging) prior to installation of Floating Silt curtain (Containment).

**2.** Shape water body soil bank to enable installation of Floating Silt Curtain (Containment) as detailed in the contract documents.

**3.** Install Floating Silt Curtain (Containment).

~~**1**~~ **4.** Anchors shall include a chain having a minimum weight of ~~3.3~~ 3.0 pounds (~~1.5~~ 1.4 kg) per yard (meter) and anchor weights as needed to hold curtain down.

~~**2**~~ **5.** Inspect the containment floating silt curtain after heavy winds or major rain storms (1 inch (25 mm)) to check for damage and depth of silt on the bottom of the silt curtain. If 2 inches (50 mm) or more of silt is present on top of the silt curtain, remove the silt curtain and silt as described below and reinstall floating silt curtain.

~~**3**~~ **6.** Upon completion of the work or when clean-out of containment silt curtain is required, remove containment silt curtain ~~and contained silt by pulling the top of curtain towards land until it reaches the trench line~~. ~~Remove entrenched fabric and pull both ends up and out of the water.~~ Dispose of collected silt offsite at an upland, non-wetland location or as approved by the Engineer. Following removal of containment curtain, the hanging curtain shall remain in place for a minimum of 48 hours after which it can be removed, provided all work in the area being protected is completed.

**C. Floating Silt Curtain (Hanging).**

**1.** Anchors shall be a minimum of ~~40~~ 60 pounds (~~18~~ 27 kg) and located at a maximum spacing of ~~100~~ 50 feet (~~30~~ 15 m) along curtain.

**2.** Hanging silt curtain shall remain in place for a minimum of 48 hours after completion of work activity to allow suspended sediment to settle out after which time the silt curtain can be removed. Remove curtain in a manner that will prevent re-suspension of silt into the water.

**12XXX.04 METHOD OF MEASUREMENT.**

**A.** Floating Silt Curtain, of the type specified, will be measured by length in feet (meters) furnished and installed.

**B.** Clean-out of Floating Silt Curtain (Containment) will be measured by length in feet (meters) removed, cleaned, and reinstalled (if necessary) each time cleaning is required.

**C.** Maintenance of Floating Silt Curtain, when directed by the Engineer, will be measured in feet (meters) for sections of curtain requiring maintenance (typically 50 foot (15 meter) sections).

**12XXX.05 BASIS OF PAYMENT.**

**A.** Payment for Floating Silt Curtain (Hanging) will be the contract unit price for the length in feet (meters) of hanging silt curtain furnished and installed. Payment is full compensation for labor, equipment, and materials necessary to construct, ~~maintain,~~ and remove hanging silt curtain. Upon satisfactory installation of hanging silt curtain, the Engineer may authorize partial payment not exceeding 80% of the quantity placed. Remaining quantity will be paid after Floating Silt Curtain is removed.

**B.** Payment for Floating Silt Curtain (Containment) will be the contract unit price for the length in feet (meters) of containment silt curtain furnished and installed. Payment is full compensation for labor, equipment, and materials necessary to construct ~~and maintain~~ containment silt curtain.

**C.** Payment for Clean-out of Floating Silt Curtain (Containment) will be the contract unit price for the length in feet (meters) of the Containment Silt Curtain removed each time cleaning is required. Payment is full compensation for labor and equipment necessary to remove and clean containment silt curtain, remove and dispose of collected silt, and reinstall containment silt curtain (if necessary). Clean-out of Floating Silt Curtain (Containment) will be paid to remove the containment silt curtain at the completion of the project.

**D.** Payment for Maintenance of Floating Silt Curtain will be at the contract unit price per foot (meter) of floating silt curtain requiring maintenance, as directed by the Engineer. Payment is full compensation for labor, equipment, and materials necessary to maintain Floating Silt Curtain (Hanging and Containment). Maintenance includes repairs and realignment of existing curtain and labor cost when the Floating Silt Curtain is replaced due to loss or destruction. When Floating Silt Curtain is lost or destroyed, Contactor will receive additional payment based on the material invoice cost of the replacement curtain.

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Brian Smith | **Office:** Design | **Item 23** |
| **Submittal Date:** 9/3/2013 | **Proposed Effective Date:** 2/18/2014 | |
| **Article No.:**<br>**Title:** | **Other:** Developmental Specifications for Contractor Furnished Borrow | |

**Specification Committee Action:** Approved with changes.

| | | | |
|---|---|---|---|
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See attached DS for Contractor Furnished Borrow.

**Comments:** This specification will be used as an SP for the Highway 100 Linn County projects in the January letting, a DS for the February and March lettings, and go into the GS in April.

The bid item for contractor furnished borrow material was changed to Contractor Furnished Embankment-in-Place. Contractor furnished borrow is a generic term for the site and material which can be either embankment-in-place or select treatment.

The committee decided to make Contractor Furnished Embankment-in-Place a plan quantity item.

The Offices of Construction & Materials and Design requested to keep all of the section Processing Contractor Borrow Submittals, Approval, and Activity so that the Department knows the procedure.

A committee member asked why the DS for Contractor Furnished Borrow still contains language on designated and other types of borrows. The DS was written in the form of a spec. revision, so that is how it has been processed. The bid items used with the DS will reflect that the material is contractor furnished. Once this goes into the GS, there will be some Department projects with designated or mandatory borrows, as well as local projects that could have these types of borrows.

**Specification Section Recommended Text:** See attached DS for Contractor Furnished Borrow. Changes from the October Specification Committee meeting submittal are highlighted.

**Comments:** The section of the Appendix titled, Processing Contractor Borrow Submittals, Approval, and Activity, should be removed. This information is for internal Iowa DOT use only and is not necessary for the Contractor.

The AGC is concerned about having to submit R sheets showing soil boring layouts. The Office of Design is determining a way to address this concern.

There is one project in the January letting that will use this DS as a Special Provision since the DS has not yet been approved.

The following comments are from the September Spec. Comm. meeting:
FHWA asked about NEPA clearances and permits. The Department will not review or verify clearances or permits, only ask the Contractor if they have obtained all necessary clearances or permits.

SUDAS asked about the timeline for project implementation. The Office of Contracts stated that the Department has made a commitment to the AGC to inform contractors of projects requiring large borrows approximately 6 months before letting. The contractors can do some investigation prior to letting and then proceed if they are awarded the project. There will be some delay in beginning construction while the Contractor obtains the property and necessary clearances and permits. Projects requiring large borrows should be let in the fall or early winter to allow for this process.

During a meeting with the AGC, the AGC asked if borrows could be pre-approved before the letting. The Department will not review any proposed borrows until after a contract has been signed.

The Office of Construction and Materials asked what the preliminary costs for investigation will be. AGC indicated that doing some borings will cost in the neighborhood of $2000. Further investigation would go up from there.

The Office of Contracts indicated that the Construction Manual contains contact information for various state agencies that could provide information on potential issues with proposed borrows to the contractors prior to letting.

The District 6 Office asked about historical and archaeological clearances, since the specification only mentions environmental clearances. It is intended that "environmental clearances" covers all site specific clearances and permits. Contractors are not required to obtain the same clearances as the Department is required to obtain. They must review for these issues, but not obtain clearances.

The Office of Design pointed out that they cannot know what select material will be available from the Contractor's borrow. If select is available from the roadway cut, the designer will assume that select will be available from a nearby borrow and design the plan accordingly. If select is not available from roadway cut, the subgrade treatment will be designed as special backfill.

Brian Smith will be the controller of this DS.

It is intended that this DS be incorporated into the April GS so that it will apply to all projects. Cities and Counties will still have the option to provide borrows as well as on select State projects.

The Office of Design indicated that balances will not be shown on the 'D' sheets, as the designer will not know where material is coming from. The 'T' sheets will have more totals, at least on every sheet, for the Contractors information.

Embankment-in-Place, Contractor Furnish will be the bid item used for projects with contractor furnished borrow. Do we need to define this bid item in the DS so that it is used properly?

The Office of Design indicated that the future Materials I.M., which is an attachment to the DS, has the Department as the reviewer of all proposed borrows. The language will be revised before the official Materials I.M. is released in April, so that Cities and Counties will be responsible for their own review of proposed borrows.

The District 4 Office asked about the Engineer witnessing samples. There is a difference in the language between projects with greater than 10,000 CY and projects with less than 10,000 CY. The Engineer will need to witness all samples, so the specification will be revised.

The District 4 Office asked about the Department's frequency of verification samples. This will need to be defined in the Materials I.M. It was suggested that this information be placed in Materials I.M. 204 and the suggested rate is 10%. This frequency will need to go in the DS until the Materials I.M. goes into effect.

The Office of Construction and Materials will make sure that the Materials I.M. is ready to be issued for April.

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

See attached Developmental Specifications for Contractor Furnished Borrow

**Reason for Revision:** Provide specifications for contractor furnished borrows.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** X | **No** | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |

**Comments:** A previous version of these spec. revisions was shared with the industry in May. The current version has been submitted to AGC for

**DS-120XX**
**(New)**

Iowa Department of Transportation

**DEVELOPMENTAL SPECIFICATIONS**
**FOR**
**CONTRACTOR FURNISHED BORROW**

**Effective Date**
**February 18, 2014**

**THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE DEVELOPMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**2102.02, D, Borrow.**

**Replace** the title and Article**:**
**~~Borrow~~ Material Suitability**.

1. **Select Treatment Material.**
   a. **Cohesive Soils.**
      Meet all of the following requirements:
      **1)** 45% or less silt size fraction.
      **2)** 110 pcf (1750 kg/m$^3$) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
      **3)** Plasticity index greater than 10.
      **4)** A-6 or A-7-6 soils of glacial origin.
   b. **Granular Soils.**
      Meet all of the following requirements:
      **1)** 15% or less silt and clay.
      **2)** 110 pcf (1750 kg/m$^3$) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
      **3)** Plasticity index, 3 or less.
      **4)** A-1, A-2, or A-3 (0).
   c. **Special Backfill Material ~~Material~~.**
      Meet the requirements of Section 4132.
   d. **Modified Subbase Material.**
      Meet the requirements of Section 4123.

2. **Suitable Soils.**
   a. Ensure all soils provided for the construction of embankments meet the requirements below. They are suitable when moisture control or moisture and density control is designated.
      **1)** 95 pounds per cubic foot (1500 kg/m$^3$) or greater density (AASHTO T 99 Proctor Density or Materials I.M. 309).
      **2)** AASHTO M 145~~-91~~ index of less than 30.
      **3)** Liquid Limit (LL) less than 50.

**b.** Soils not meeting these requirements are considered unsuitable soils, regardless of classification.
**c.** When placing soil below water, use clean granular material.

**3. Unsuitable Soils.**
Place in the work only as specified by Standard Road Plan EW-102. Use in the work will be according to the definitions in Table 2102.02-1:

**Table 2102.02-1: Uses for Unsuitable Soils**

| Definition | Use |
|---|---|
| **1.** Peat or Muck.<br>**2.** Soils with a plasticity index of 35 or greater.<br>**3.** A-7-5 or A-5 having a density less than 85 pcf (1350 kg/m$^3$) (AASHTO T 99 Proctor Density or Materials I.M. 309). | Slope Dressing Only. |
| **1.** All soils other than A-7-5 or A-5 having a density of 95 pcf (1500 kg/m$^3$) or less (AASHTO T 99 Proctor Density or Materials I.M. 309).<br>**2.** All soils other than A-7-5 or A-5 containing 3.0% or more carbon. | Type C placement placed 3 feet (1 m) below top of subgrade in fills. |
| **1.** A-7-6 (30 or greater).<br>**2.** Residual clays (overlaying bedrock), Paleosols, gumbo, and gumbotils regardless of classification. | Type B placement placed 5 feet (1.5 m) below top of subgrade in fills. |
| **1.** Shale.<br>**2.** A-7-5 or A-5 soils having a density greater than 86 pcf (1351 kg/m$^3$) but less than 95 pcf (1500 kg/m$^3$) (AASHTO T 99 Proctor Density or Office or Materials I.M. 309). | Type A placement placed in layers 5 feet (1.5 m) below top of subgrade in fills (Alternate layers to consist of suitable soils or Type C placement soils). |

**2102.03, F, Borrow.**

**Replace** the Article:

**1. General.**
**a.** Unless provided otherwise in the contract documents, when the quantity of material required for embankments is not available within the limits of the roadway cross sections or specific borrow areas as indicated, make up the deficiency from borrow areas the Contracting Authority provides and defines on the plans or furnish equivalent material from alternate borrow areas (in lieu of plan borrows) or Contractor furnished borrow.
**b.** The following definitions apply to this specification:
**1) Designated Borrow Areas.**
A general term for borrow areas the Contracting Authority provides; including mandatory and optional borrow areas.
**a) Mandatory Borrow Areas.**
An area provided by the Contracting Authority from which the Contractor is expected to obtain borrow material and to operate in the area according to the contract documents. Mandatory borrow areas will be designated in the contract documents.
**b) Optional Borrow Area.**
An area provided by the Contracting Authority from which the Contractor may obtain borrow material. If so obtained, the Contractor is expected to operate in the area according to the contract documents. Borrow areas are optional borrow areas unless specifically designated as mandatory borrow areas.

**2) Alternate Borrow Areas.**
An area outside the highway right-of-way provided by the Contractor from which the Contractor may obtain borrow material in lieu of designated borrow areas and to be used according to the contract documents.

**3) Contractor Furnished Borrow.**
A general term for borrow material provided by the Contractor. ~~The type of material shall be as specified in the contract documents. If the type of material is not specified, provide Suitable Soils. Contractor may elect to provide Select Treatment Material in lieu of Suitable Soils.~~ Unsuitable Type A, B, and C materials, with the exception of shale and residual clays, will be allowed. Place unsuitable materials as specified in Standard Road Plan EW-102.

**c.** Upon completion of designated borrows, excavate borrow areas that are sufficiently regular in cross section to permit accurate measurement. Carefully blend to natural land forms and avoid unnecessary damage to the land. Do not turn natural drainage of surface water on to adjoining owners. Use diligence in draining the surface water in its natural course or channel. Complete excavation consistent with the existing natural drainage conditions or as shown in the contract documents.

**d.** Where a mandatory borrow area is designated in the contract documents, it is mandatory that borrow material be obtained from the borrow location designated and in accordance with the borrow design on the contract documents, unless permission is obtained from the Engineer to obtain borrow from another location.

**e.** Unless the contract documents designate borrow areas as mandatory borrow areas, borrow areas will be considered optional borrow areas. The Contractor has the option of either using the optional borrow areas or proposing to furnish equivalent material from alternate borrow areas.

**f.** Do not place the estimated edge of water for a pond borrow closer than 100 feet (30 meters) from any public right-of-way. A pond borrow is a borrow that has the intention of excavation below natural ground and leaving a body of water for a designated purpose.

**g.** Refer to Federal Aviation Administration (FAA) Advisory Circular 150/5200-33B for separation criteria for hazardous wildlife attractants on or near airports.

**2. Contactor's Plan for Alternate Borrow or Revisions to Designated Borrow.**

**a.** Submit a plan to the Engineer for use of proposed alternate or designated borrow intended to be used in a manner different from that shown in the contract documents. Also, sample the proposed alternate borrow areas by core drilling or test pits. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Test samples and provide results and verification samples to the Contracting Authority

**b.** The submission for use of alternate borrow areas shall include all such areas necessary or contemplated for completion of the planned work.

**c.** Approval of materials and their use will be based on AASHTO M 145~~-91~~ and includes the following:

**1) Select Treatment Materials.**

**a)** The Engineer's approval is required for all soils required for select subgrade treatments. The Contractor may elect to substitute with special backfill material or modified subbase material at one-half the required rate at no additional cost to the Contracting Authority. If special backfill material or modified subbase material is used in lieu of select material, ~~the Contractor shall~~ provide for suitable surface and subsurface drainage of this material and provide suitable soils in lower portion of original subgrade treatment layer at no additional cost to the Contracting Authority.

**(1) Cohesive Soils.**
Meet the requirements of Article 2102.02, D, 1, a.

**(2) Granular Soils.**
Meet the requirements of Article 2102.02, D, 1, b.

**(3) Special Backfill Material.**
Meet the requirements of Section 4132.

**(4) Modified Subbase Material.**
Meet the requirements of Section 4123.

**b)** Use select treatment sources with sufficient uniformity and size to assure that complete individual treatment areas will be constructed with similar material. Substitution of treatment types (cohesive, granular, special backfill, or modified subbase material) will be allowed only with the Engineer's permission.

**2) Suitable Soils.**
Meet the requirements of Article 2102.02, D, 2.

**3) Unsuitable Soils.**
Meet the requirements of Article 2102.02, D, 3.

**4) Other Materials.**
Place materials not covered above as required by Standard Specifications.

**d.** The Engineer may decline approval of an alternate borrow area when:

**1)** Necessary clearances cannot be obtained prior to the time scheduled for commencement of work.

**2)** Restrictions attached to clearances will delay or interfere with scheduled completion of work or may result in less than necessary quantities of required borrow materials.

**3)** Contractor's plan for use of borrow areas, including Contractor's verification of quantity and quality of required material, is not sufficient to assure availability of required material.

**4)** Contractor's proposed plans fail to meet requirements of the contract documents.

**e.** The Engineer will be allowed time to evaluate each alternate borrow area. If the clearance is not obtained within 30 calendar days, the proposed use of that borrow area may be rejected. During this evaluation period, the Contractor will not be charged for working days the Contractor does not work because the Contractor cannot use the borrow area.

**f.** The maximum allowance for each contract is not to exceed 30 working days. This allowance will not apply to work for which an intermediate completion time is specified. It will be given only when the delay will not interfere with others authorized to work on the project. It does not increase the Engineer's responsibility to provide coordination.

**g.** The Contracting Authority will not be responsible for damages due to a delay in approval of an alternate borrow area or when approval of an alternate borrow area is declined.

**3. Contractor's Plan for Contractor Furnished Borrow**

**a. General.**

**1)** Approval of materials for use as Contractor furnished select treatment materials will be based on Article 2102.02, D, 1.

**2)** Contractor may elect to substitute with special backfill material or modified subbase material as shown in the contract documents at no additional cost to the Contracting Authority. If special backfill material or modified subbase material is used in lieu of select material, provide for suitable surface and subsurface drainage of this material and provide suitable soils in lower portion of original subgrade treatment layer at no additional cost to the Contracting Authority.

**3)** The Engineer may decline approval of a contractor furnished borrow(s) when:

**a)** The Contractor's submittal fails to meet Proposed Borrow Report requirements.

**b)** The Contractor's plan for use of borrow areas, including quantity and quality of required material, is not sufficient to assure availability of required material.

**b. Sampling and Testing**

**1) Total Project Quantity of Contractor Furnished Borrow Greater than 10,000 Cubic Yards (7650 $m^3$).**
Sample and test the proposed contractor borrow areas and submit Proposed Borrow Report as specified in Appendix A. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Submit the report electronically to the Engineer. Include Iowa DOT Proposed Contractor Borrow Identification Form, sampling/field logs, and test reports. A minimum of 21 calendar days is required for review and approval by the Engineer. The Contracting Authority will not be

responsible for damages or delays due to incomplete submittals or when approval of a borrow is declined.

**2) Total Project Quantity of Contractor Furnished Borrow less than 10,000 Cubic Yards (7650 $m^3$).**

Sample proposed contractor borrow areas. When the Contracting Authority determines it is necessary, sample in the presence of the Engineer. Provide verification samples to the Engineer. A minimum of 14 calendar days is required for review and approval by the Engineer.

**~~3~~ 4. Contractor Obtained Clearances and Permits.**

Obtain necessary environmental clearances and permits, and comply with all restrictions attached to these clearances and permits for alternate borrow areas and sites where Contractor furnished borrow is obtained.

**4 5. Restoration.**

**a.** Optional borrow areas shown on the Contractor's plan shall be left in at least as good a condition as that required by the contract documents for designated borrow areas. This applies whether all or only a part of the site or the material is used for borrow.

**b.** Use and rehabilitate optional borrow areas and alternate borrow areas (unless Contractor and landowner have agreed to the final design of the alternate borrow area) so that:

**1)** The sites can continue to be used for the purpose for which they were used prior to removal of borrow.

**2)** The sites may still be used for those higher and more profitable or better potential uses to which the site might have been put to prior to removal of borrow material.

**c.** The Engineer will require restoration according to 314.12, Code of Iowa, to meet the above requirement. The overall Contractor's plan shall neither detract from nor interfere with the air, light, and view of motorists nor of adjacent landowners.

**~~5~~ 6. Obligations and Payment.**

Use of an alternate borrow area shall not increase future obligations or total cost to the Contracting Authority. Complete all excavation from the roadway and the mandatory borrow areas.

**~~6~~ 7. Starting Work.**

Except for exploratory purposes, do not start work and take material from an alternate borrow or a Contractor furnished borrow area until after:

- The Engineer approves the borrow proposal in writing, and
- Providing the Engineer with a written release executed by the property owner and the Contractor relieving the Contracting Authority of any and all obligations to the property owner and saving the Contracting Authority harmless from all claims for injury to persons or damage to property resulting from the Contractor's operations.

**~~7~~ 8. Material Verification.**

Material supplied from alternate borrow areas ~~or Contractor furnished borrow~~ may be verified by the Contracting Authority for compliance with these requirements. When testing by the Contracting Authority is required, a minimum of ~~10 working~~ 14 calendar days is necessary for testing. When the Engineer orders, remove and replace material verified not in close compliance with these requirements, at no additional cost to the Contracting Authority.

**2102.04, A.**

**Add** the Articles:

**8. Contractor Furnished Select Treatment.**

Cubic yards (cubic meters) shown in the contract documents, adjusted by changes in available on site select treatments.

**9. Contractor Furnished Embankment-in-Place.**
Cubic yards (cubic meters) shown in the contract documents.

**2102.05, A.**

**Add** the Articles:

**8. Contractor Furnished Select Treatment.**
According to Article 2102.05, A, 3. Payment includes furnishing material.

**9. Contractor Furnished Embankment-in-Place.**
According to Article 2102.05, A, 3. Payment includes furnishing material.

**2105.02, Materials.**

**Replace** the article:

For topsoil furnished by the Contractor, provide material meeting the requirements of Articles 4170.09, A, 1, and 4170.09, A, 3, or strip existing topsoil from beneath template fill sections within the project limits if stripping of that topsoil is not already included as part of the project. Replace topsoil stripped from beneath template fill with an equivalent quantity of Class 10 or Embankment-in-Place material at no additional cost to the Contracting Authority.

**2108.05, Basis of Payment.**

**Add** the article:

**C.** Overhaul will not be paid for Contractor furnished material (such as borrow or topsoil) and waste material.

APPENDIX A

CONTRACTOR FURNISHED BORROW

**GENERAL**

This procedure describes requirements on sampling, testing, submittal, and approval of Contractor furnished borrow sites/sources where project quantity of Contractor furnished borrow is greater than 10,000 cubic yards (7650 $m^3$).

Types of borrows covered in this Appendix are:

1. Excavated, which includes:

   Drainable Borrow: A drainable borrow is one that has the intention of returning the site, as close as possible, to the previous activity/use, and

   Pond Borrow: A pond borrow is one that has the intention of excavation below the natural ground and leaving a body of water for a designated purpose.

2. Non-excavated, such as stockpiled material, which includes:

   Closed/Existing: A stockpile that will not have material added during the course of the project, and

   Open/Active: A stockpile that will have material added during the course of the project.

**PROPOSED BORROW REPORT SUBMITTAL REQUIREMENTS**

A complete investigation of each proposed borrow shall include an adequate boring layout, a field log of each boring, appropriate sampling, and complete test results. Test pits instead of borings are allowed; however, this applies only for soil layer descriptions and sampling above the water table.

Only those sites that the Contractor intends to utilize for project construction shall be submitted as proposed borrows. The proposed borrows shall collectively satisfy the borrow need for project construction.

The Engineer will inform the Contractor of the acceptance or non-acceptance of the Proposed Borrow Reports.

If the volume of available suitable soil is insufficient due to the disapproval of a borrow or borrows, the Contractor shall make a new submittal. Any new submittal shall follow the same procedure as previous submittals.

An open/active stockpile submittal will require information on the stockpile material currently in place (see submittal requirements for non-excavated borrows) and information on material that will be excavated and added to the stockpile during the course of the project (see submittal requirements for excavated borrows).

The purpose of the proposed borrow submittal is only for the evaluation of the site. There will be no spatial requirements, restrictions, or limitations placed on the borrow design (conceptual or final).

A complete Proposed Borrow Report for each proposed borrow shall include:

1. Completed Iowa DOT Proposed Contractor Borrow Identification Form (provided at the end of this document).

2. Aerial photo showing the location of the proposed borrow site or the location of the proposed stockpile (this includes the geospatial extent/limits of either). A marked-up recent Google Earth photo should be sufficient.

   For excavated borrows: in addition to the location of the borrow site, the aerial photo shall show the conceptual design and the location of the borings along with their identification numbers. A conceptual design is a general outline of the proposed borrow excavation limits.

   For non-excavated borrows: in addition to the location of the stockpile, the aerial photo shall show the sampling locations along with their identification numbers.

   a. Sample/Boring Layouts:
      i. For excavated borrows, a boring layout pattern shall spatially cover a potential borrow site to adequately identify the soil layers encountered throughout the site, and provide for sufficient profile representation. Borings shall be spaced to maximize the coverage and at intervals no greater than 400 feet (120 m) (subject to borrow shape and general outline). An example of a boring layout is provided at the end of this document.

         As an example: a 40 acre (16.2 ha) (square) borrow site will typically require a minimum of nine borings.

         Boring depths shall extend to a reasonable depth below the anticipated maximum excavation for both drainable and pond borrows (such as 10 feet (3 m)) to help accommodate potential material shortfalls. If additional excavation during construction is required to meet the borrow need, additional borings (with sampling and testing) are required.

      ii. For non-excavated borrows, a sampling layout pattern shall spatially cover a potential borrow site to adequately represent the site and define the composition of soil material to be encountered. Sampling shall be spaced to maximize coverage and represent the entire site. Spacing shall be no greater than 400 feet (120 m) (subject to borrow shape and general outline).

   b. Samples:
      i. Loose/bulk samples of sufficient size (30 - 40 pounds (14 - 18 kg)) shall be taken, multiple times throughout the borrow site, for each soil layer encountered for excavated borrows or for each soil type for non-excavated borrows. For excavated borrows, a sample may only represent a similar layer in an adjacent boring no more than 400 feet (120 m) distant. Each sample shall be labeled with the boring ID and depth of sample, and shall be tested for mechanical analysis, determination of Atterberg limits, Munsell color comparison, percent of grain sizes, USDA textural and AASHTO classification, etc. (see Section “Laboratory test results” below). At least two samples for each predominant soil layer encountered shall be tested for Proctor density and optimum moisture.

      ii. Samples obtained prior to execution of contract shall be preserved by the Contractor. For samples obtained after execution of contract, the Engineer shall collect verification samples (split samples) from boring or test pits sampled by the Contractor. At the discretion of the Engineer, random verification samples (split samples) shall be submitted to the Central Materials Lab for verification testing.

3. Sampling/field logs:

   a. For excavated borrows, a descriptive field log of each borrow boring shall be submitted. An example is provided below. The following is the expected information for each boring in a borrow boring field log.
      - Boring ID number and GPS location (either State Plane or Lat/Long Coordinates).

- A field description of each soil layer (color, soil type, consistency, and geologic origin if possible).
- Depth to bottom of each soil layer.
- A notation indicating if a layer was sampled.
- In-place moisture conditions of the soil layers.
- Measured water table depth and amount of time between drilling and reading.

b. For non-excavated borrows, a descriptive log of each sampling site shall be submitted. An example is provided at the end of this document. The following is the expected information for a sampling log.
   - Sample ID number and GPS location (either State Plane or Latitude and Longitude Coordinates).
   - A field description of each sample (color, soil type, and consistency) and depth.

4. Laboratory test results:

   The testing of the borrow samples shall be performed by an accredited lab in accordance with Materials I.M. 208.

   The test results shall be submitted in report or tabulated form. An example of a tabulated form is provided at the end of this document.

   Each test report shall contain:
   - Boring/Sample ID number, and GPS Location(either State Plane or Latitude and Longitude Coordinates).
   - For excavated borrows only, depth of sample (from – to) and in units of feet (meters).
   - Atterberg Limits (AASHTO T 89 and T 90, or ASTM D 4318).
   - Percent Gravel, Sand, Silt, and Clay (AASHTO T 88 or ASTM D 422).
   - Textural classification (USDA).
   - AASHTO classification (AASHTO M 145).
   - Proctor density and optimum moisture, when tested (see Section “Samples” above) (AASHTO T 99, ASTM D 698, or Materials I.M. 309)
   - Percent Carbon Content, where applicable (Office of Materials Test Method No. Iowa 111).
   - Sieve analysis (Percent Passing) (AASHTO T 88 or ASTM D 422).
   - Munsell Color comparison.

5. For excavated borrows only, provide profile views through the proposed borrow. A minimum of one profile is acceptable as long as the profile reasonably depicts all borings within the borrow and within close proximity (no more than 100 feet (30 m)) from the borrow edge. These profiles may be hand drawn. The profiles shall: include the location of each boring, depict the depths of the sampling in each boring, show the general soil layers through the borings, and illustrate the extent and depth of the anticipated excavation.

**PROCESSING CONTRACTOR BORROW SUBMITTALS, APPROVAL, AND ACTIVITY**

This section outlines the procedures that the Engineer, Office of Construction and Materials, and Soils Design Section of the Office of Design will follow for excavated and non-excavated contractor furnished borrow.

**A. Verification Sampling.**

1. The Engineer will be responsible for monitoring boring/sampling activity that occurs after execution of contract. At the discretion of the Engineer, random verification samples (split samples) will be obtained from those collected by the Contractor (minimum frequency: one for every ten Contractor samples).

2. If taken, the Engineer will submit verification samples to the Central Material Laboratory of the Office of Construction and Materials, for verification testing.

3. The Central Material Laboratory will send the verification test results to Engineer, the Office of Construction and Materials, and the Soils Design Section.

**B. Proposed Borrow Report.**

1. The Engineer will forward the reports to the Office of Construction and Materials, and the Soils Design Section.

2. The Office of Construction and Materials, and the Soils Design Section will evaluate the quality (soil suitability) and quantity (soil type availability) of the proposed borrows.

3. The Office of Construction and Materials, and the Soils Design Section will coordinate a reply to the Engineer. The coordinated reply will include the approval or disapproval of the proposed borrows, and any applicable comments.

4. The Engineer will convey the approvals or disapprovals and any applicable review comments or requirements to the contractor.

**C. Borrow Excavation/Use.**

The Engineer will monitor the use of the borrow material. If there are questions concerning quality of borrow material, the Engineer will request verification samples to determine material suitability and acceptable use.

IOWA DOT PROPOSED BORROW IDENTIFCATION FORM

Date _____

Project Number _____ County_____

Project Description_____

_____

Contractor_____ Phone_____

1. Borrow ID#:_____
2. Location (Legal Description):_____

   _____
3. Size (acres (hectares)):_____
4. Type:
   - ☐ Drainable borrow
   - ☐ Pond Borrow
   - ☐ Other _____
   - ☐ Stockpiled Borrow – Closed/Existing
   - ☐ Stockpiled Borrow – Open/Active
5. Estimated quantities (in cubic yards (cubic meters)):
   Class 10 (suitable)_____

   Select _____

   Unsuitable _____
6. Name, address, phone number, and email of contact person from Contractor if additional information is required:_____

   _____

Attachment: ☐ Proposed Borrow Report

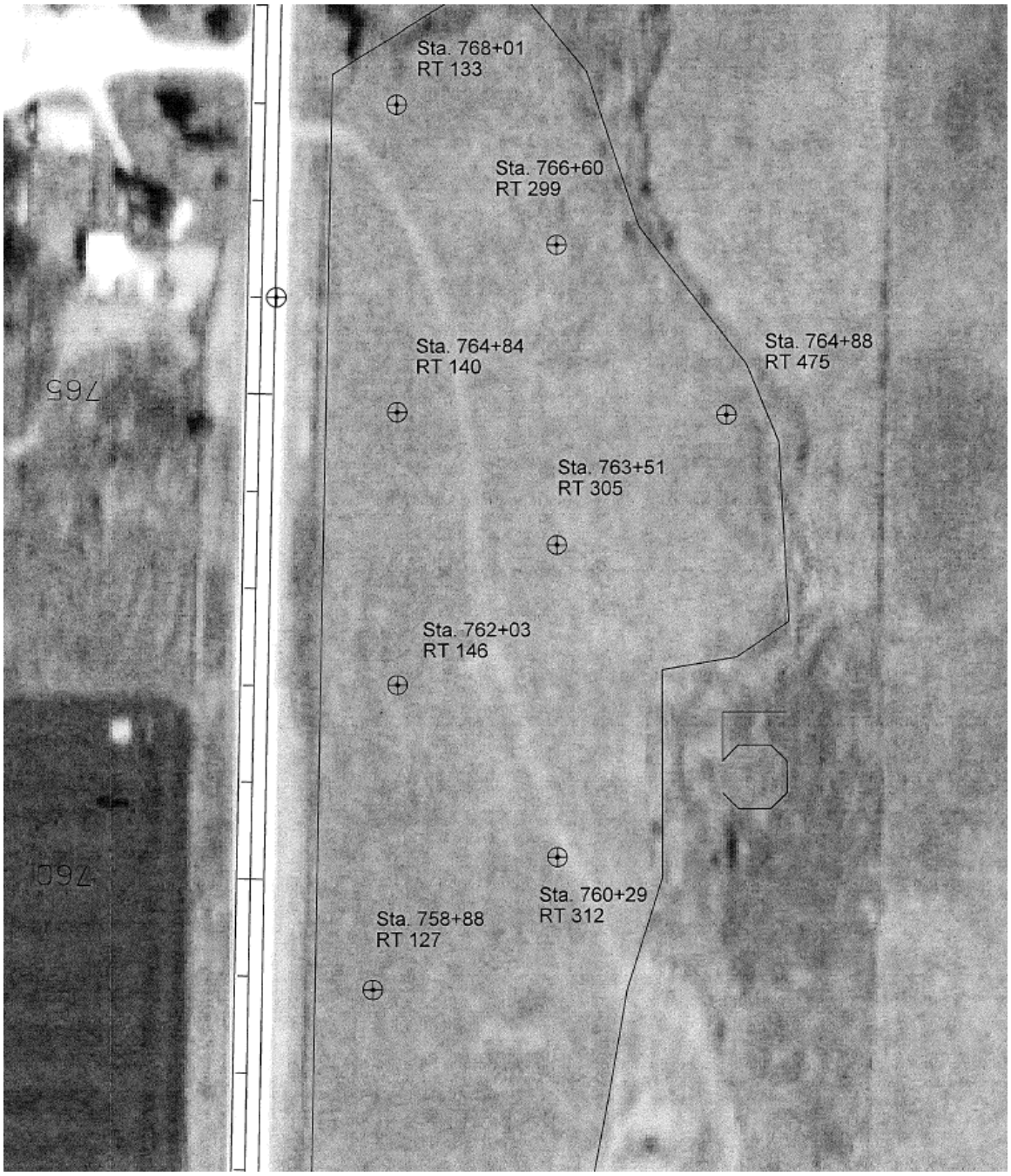
_____

Office of Construction & Materials_____ Date _____

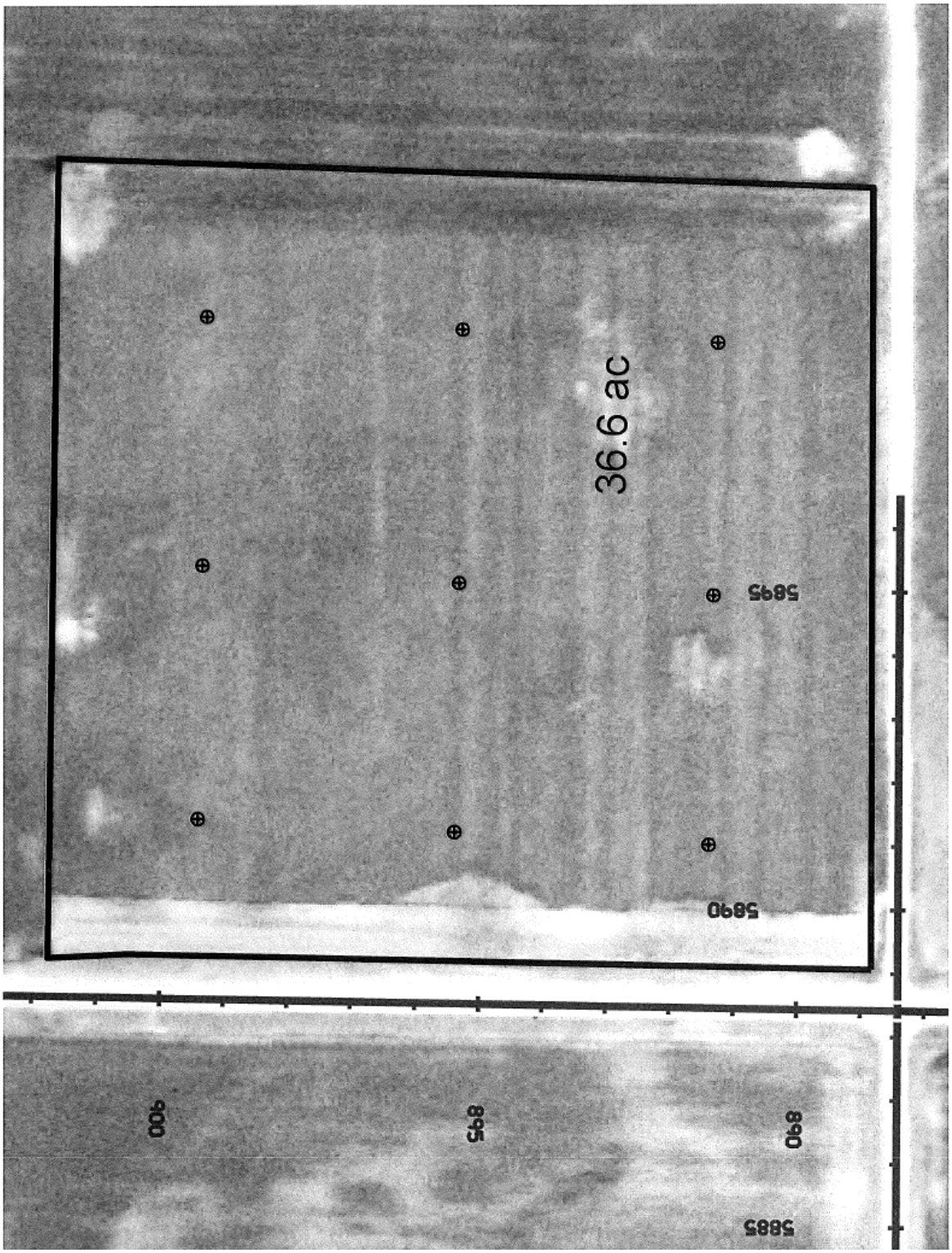
Office of Design, Soils Design _____ Date _____

Resident Construction Engineer _____Date _____

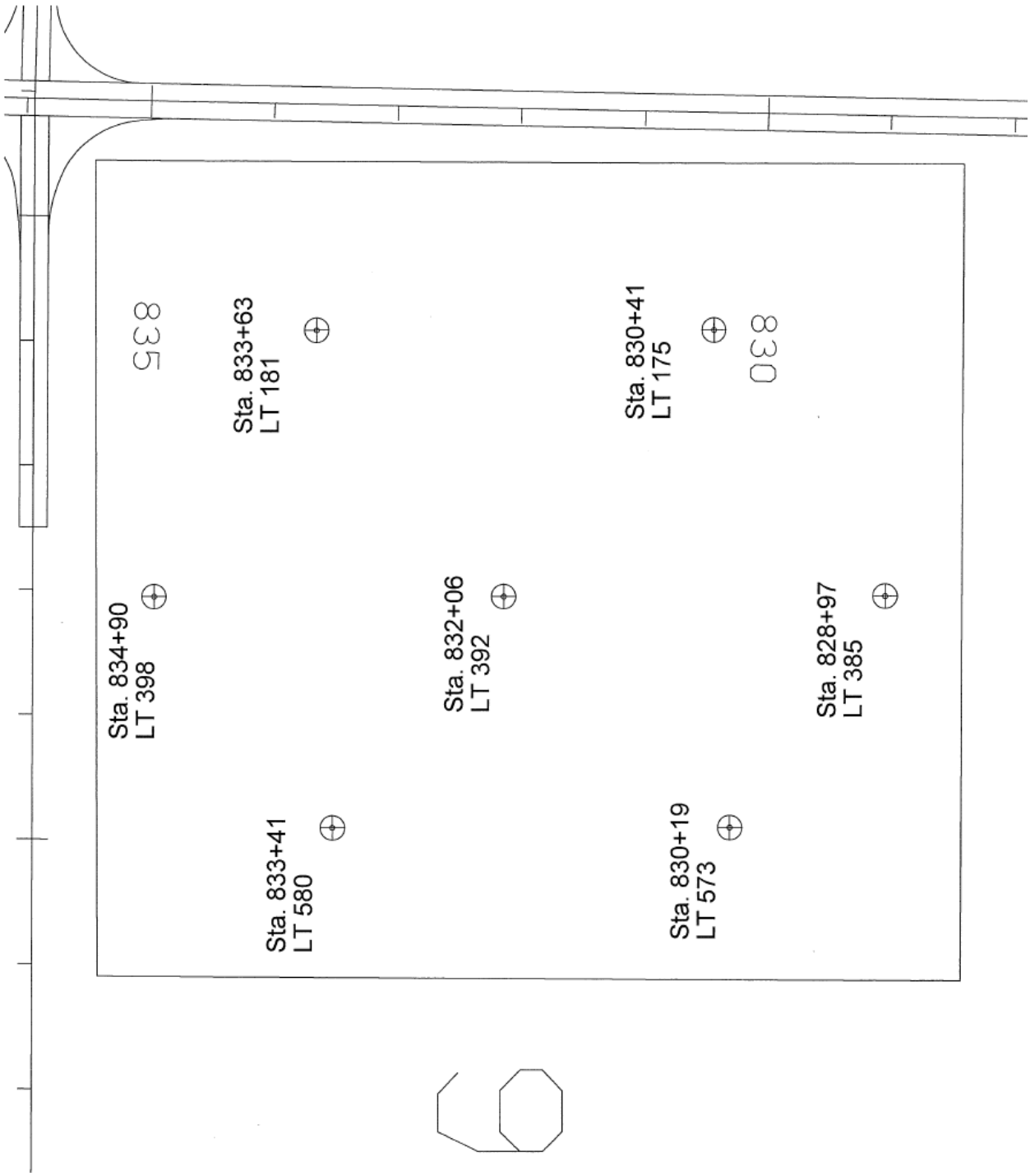
EXAMPLES: BORING LAYOUT, SAMPLING/BORING LOG, LABORATORY RESULTS, AND PROPOSED CONCEPTUAL DESIGN AND PROFILES




**Example of boring layout**




**Example of boring layout**




**Example of boring layout**

Project # NHS-141-1(025)--3H-31 Borrow (Stockpile) Date 4/15/2011

| Boring ID | GPS(x,y,z) | Sample or Referral | Depth | Layer | Description |
|---|---|---|---|---|---|
| M-0022 | X: 4270090.23 | Sample | 0.5 | A | Dark Brown Silty Loam |
| Borrow 1 | Y: 3650678.897 | Sample | 15.4 | B | Gray to Brown Sandy Clay |
| Location 8 | Z: 900.5 | | | | |
| | | | | | |
| M-0023 | X: 4269290.588 | M-0022-A | 0.4 | A | Dark Brown Silty Loam |
| Borrow 1 | Y: 3650678.999 | Sample | 12.9 | B | Brown Sandy Clay |
| Location 9 | Z: 902.4 | | | | |
| | | | | | |
| M-0024 | X: 4269690.6 | Sample | 0.5 | A | Dark Brown Silty Loam |
| Borrow 1 | Y: 3650677.004 | M-0023-B | 14.8 | B | Brown Sandy Clay |
| Location 10 | Z: 901.3 | | | | |
| | | | | | |
| | | | | | |

**Example of stockpile sampling log**

Project # NHS-065-12(003)--3H-68 Borrow Date 7/15/2000

| Boring ID | GPS(x,y,z) | Soil Moisture | Sample or Referral | Depth | Layer | Description |
|---|---|---|---|---|---|---|
| R-0296 | X: 5229277.001 | Moist | Sample | 1.5 | A | Black to Brown Silty Loam (Topsoil) |
| Borrow 1 | Y: 4550344.034 | Wet | Sample | 8.5 | B | Gray to Brown Sandy Glacial Clay |
| Hole 1 | Z: 1000.35 | Wet | Sample | 16.0 | C | Gray Medium Sand |
| | | Wet | Sample | 20.0 | D | Gray Sandy Glacial Clay |
| | | Wet | Sample | 33.0 | E | Dark Gray Glacial Clay with Occassional Sand Seams |
| | | | | | | |
| Comment: | | | | 2.5 | Wet | 24 Hr H2O reading |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| R-0297 | X: 5229680.061 | Moist | R-0296-A | 2.0 | A | Black to Brown Silty Loam (Topsoil) |
| Borrow 1 | Y: 4550344.002 | Wet | Sample | 4.5 | B | Gray to Brown Sandy Glacial Clay |
| Hole 2 | Z: 1001.40 | Wet | Sample | 11.0 | C | Brown to Gray Sand with binder |
| | | Wet | R-0296-C | 25.3 | D | Gray Medium Sand |
| | | Wet | R-0296-E | 35.4 | E | Dark Gray Glacial Clay with Occassional Sand Seams |
| | | | | | | |
| Comment: | | | | 2.1 | Wet | 24 Hr H2O reading |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| R-0298 | X: 5230079.325 | Moist | Sample | 1.2 | A | Black Silty Loam (Topsoil) |
| Borrow 1 | Y: 4550345.005 | Moist | Sample | 3.5 | B | Brown Silty Clay Loam (Loess) |
| Hole 3 | Z: 1000.30 | Wet | R-0297-B | 12.0 | C | Gray to Brown Sandy Glacial Clay |
| | | Wet | Sample | 24.6 | D | Gray to Brown Medium Sand |
| | | Wet | Sample | 30.8 | E | Dark Gray Glacial Clay with Occassional Sand Seam |
| | | | | | | |
| Comment: | | | | 3.5 | Wet | 12 Hr H2O reading |
| | | | | | | |
| | | | | | | |

**Example of boring log**

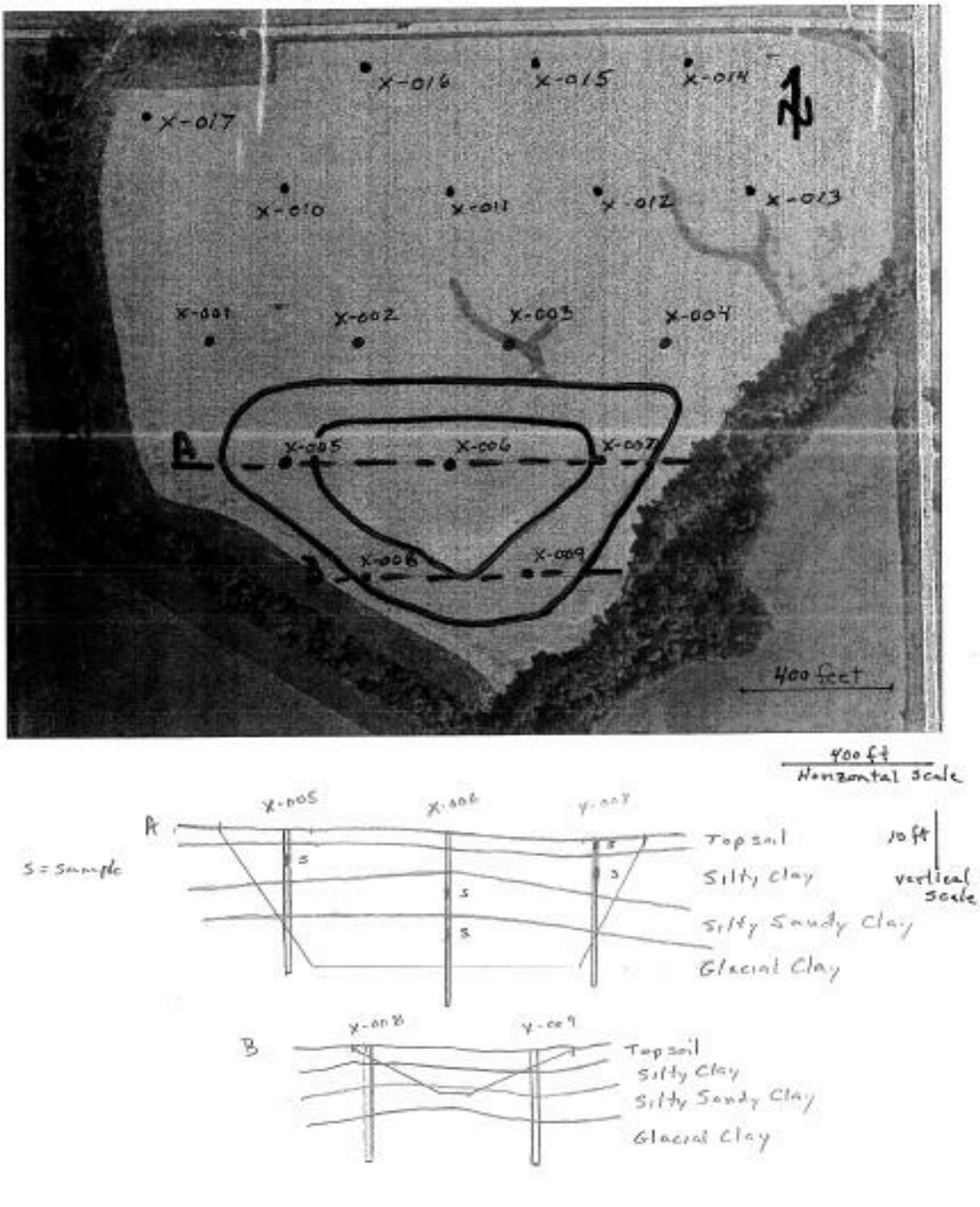
**Soil Survey 'English' Final Report (Both Group Indexes)** 8/1/2013

*County-* *Project:* *Road:* *Job:* *Page-* **1** *of* **8**

| | Location | | | | Sender | Plastic | | | ********** | | | | Proctor | | CAR- | Texture | AASHTO | | ** Sieve Analysis(% Passing) ** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Station | Dist. | LAYER | Lab No. | No. | LL | PL | PI | GR | SA | SI | CL | Den | M | BON | Class | A (New)<Old> | Color | 3/4 | 3/8 | 4 | 10 | 40 | 100 | 200 |
| | Borrow 1 | Hole 1 | 0.0-1.5 | 10-460 | R0948A | 45 | 22 | 23 | 0 | 49 | 38 | 13 | 93 | 25 | 3.8 | LO | 7-6(8) <8> | Black | | | | 100 | 96 | 67 | 51 |
| | Borrow 1 | Hole 1 | 1.5-12.0 | 10-461 | R0948B | 40 | 15 | 25 | 1 | 21 | 50 | 28 | 112 | 16 | | CL LO | 6(18) <14> | Gr Br | | | 100 | 99 | 97 | 82 | 78 |
| | Borrow 1 | Hole 1 | 12.0-35.0 | 10-462 | R0948C | 28 | 14 | 14 | 4 | 31 | 46 | 19 | 121 | 12 | | LO | 6(6) <8> | Dark Gr | 100 | 99 | 98 | 96 | 90 | 74 | 65 |
| | Borrow 1 | Hole 1 | 35.0-40.0 | 10-463 | R0948D | 29 | 14 | 15 | 0 | 31 | 50 | 19 | | | | LO | 6(8) <9> | Dark Olive | | | | 100 | 96 | 78 | 69 |
| | Borrow 1 | Hole 1 | 40.0-50.0 | 10-464 | R0948E | 27 | 13 | 14 | 1 | 35 | 47 | 17 | | | | LO | 6(6) <7> | Dark Gr | | 100 | 99 | 99 | 95 | 75 | 64 |
| | Borrow 1 | Hole 3 | 35.0-50.0 | 10-465 | R0950D | 27 | 15 | 12 | 1 | 33 | 49 | 17 | | | | LO | 6(5) <7> | Dark Gr | | | 100 | 99 | 95 | 76 | 66 |
| | Borrow 1 | Hole 4 | 20.0-32.0 | 10-466 | R0951C | 35 | 15 | 20 | 1 | 25 | 56 | 18 | | | | SI LO | 6(13) <12> | Lt O Br | | | 100 | 99 | 95 | 82 | 74 |
| | Borrow 1 | Hole 4 | 32.0-40.0 | 10-467 | R0951D | 27 | 16 | 11 | 0 | 27 | 55 | 18 | | | | SI LO | 6(6) <8> | Olive | | | | 100 | 96 | 81 | 73 |
| * | Borrow 1 | Hole 5 | 0.0-1.0 | 10-468 | R0952A | 34 | 17 | 17 | 10 | 33 | 37 | 20 | | | | LO | 6(7) <7> | Olive Br | 98 | 93 | 91 | 90 | 84 | 68 | 57 * |
| | Borrow 1 | Hole 5 | 1.0-20.0 | 10-469 | R0952B | 29 | 14 | 15 | 3 | 29 | 47 | 21 | | | | LO | 6(7) <9> | Lt O Br | | 100 | 98 | 97 | 94 | 75 | 68 |
| * | Borrow 1 | Hole 5 | 20.0-50.0 | 10-470 | R0952C | 28 | 15 | 13 | 3 | 36 | 44 | 17 | | | | LO | 6(5) <6> | Olive Br | | 100 | 99 | 97 | 90 | 72 | 61 * |
| | Borrow 1 | Hole 6 | 0.5-3.0 | 10-471 | R0953B | 43 | 15 | 28 | 0 | 28 | 43 | 29 | 107 | 18 | 1.4 | CL LO | 7-6(18) <15> | V Dk Gr | | | | 100 | 95 | 87 | 72 |
| * | Borrow 1 | Hole 6 | 25.0-35.0 | 10-472 | R0953E | 32 | 15 | 17 | 2 | 36 | 42 | 20 | | | | LO | 6(8) <8> | Olive Br | | 100 | 99 | 98 | 88 | 70 | 62 * |
| * | Borrow 1 | Hole 6 | 35.0-50.0 | 10-473 | R0953F | 27 | 14 | 13 | 22 | 31 | 33 | 14 | | | | G LO | 6(3) <3> | Dark Gr | 94 | 88 | 82 | 78 | 71 | 55 | 47 * |
| | Borrow 1 | Hole 18 | 0.0-2.5 | 10-356 | A3874A | 31 | 20 | 11 | 1 | 42 | 41 | 16 | 110 | 16 | 2.2 | LO | 6(4) <5> | V Dk Gr | | | 100 | 99 | 88 | 63 | 57 |
| | Borrow 1 | Hole 18 | 2.5-10.0 | 10-357 | A3874B | 31 | 16 | 15 | 2 | 30 | 47 | 21 | 117 | 14 | | LO | 6(8) <9> | Lt O Br | 100 | 99 | 98 | 98 | 92 | 78 | 68 |
| | Borrow 1 | Hole 18 | 10.0-15.0 | 10-358 | A3874C | 35 | 16 | 19 | 4 | 26 | 48 | 22 | 116 | 14 | | SI LO | 6(11) <11> | Olive Br | 100 | 98 | 97 | 96 | 92 | 79 | 70 |
| | Borrow 1 | Hole 18 | 15.0-21.0 | 10-359 | A3874D | 29 | 15 | 14 | 4 | 33 | 44 | 19 | 120 | 12 | | LO | 6(6) <7> | Olive Br | | 100 | 98 | 96 | 92 | 75 | 63 |
| | Borrow 1 | Hole 18 | 21.0-39.0 | 10-360 | A3874E | 29 | 15 | 14 | 3 | 35 | 43 | 19 | 121 | 12 | | LO | 6(6) <7> | Dark Gr | | 100 | 99 | 97 | 94 | 75 | 62 |
| | Borrow 1 | Hole 18 | 39.0-50.0 | 10-361 | A3874F | 22 | 13 | 9 | 1 | 44 | 41 | 14 | 124 | 11 | | LO | 4(2) <4> | Dk Gr Br | | 100 | 99 | 99 | 94 | 65 | 55 |
| | Borrow 2 | Hole 7 | 0.0-2.0 | 10-491 | L0018A | 57 | 23 | 34 | 0 | 11 | 59 | 30 | 87 | 29 | 4.9 | SI CL LO | 7-6(33) <19> | Black | | | | 100 | 98 | 93 | 89 |
| * | Borrow 2 | Hole 7 | 2.0-6.0 | 10-492 | L0018B | 50 | 11 | 39 | 1 | 26 | 40 | 33 | | | 0.8 | CL LO | 7-6(26) <18> | Black | | | 100 | 99 | 96 | 80 | 73 * |
| | Borrow 2 | Hole 7 | 6.0-12.0 | 10-493 | L0018C | 28 | 17 | 11 | 2 | 35 | 46 | 17 | | | | LO | 6(4) <6> | Dk Gr Br | | 100 | 99 | 98 | 93 | 74 | 63 |
| * | Borrow 2 | Hole 7 | 12.0-40.0 | 10-494 | L0018D | 29 | 15 | 14 | 5 | 32 | 44 | 19 | | | | LO | 6(6) <7> | Dk O Gr | 100 | 98 | 97 | 95 | 89 | 73 | 63 * |
| | Borrow 2 | Hole 8 | 1.5-4.5 | 10-495 | L0019B | 28 | 14 | 14 | 4 | 52 | 27 | 17 | 117 | 13 | | SA LO | 6(2) <3> | Dk Gr Br | 100 | 98 | 97 | 96 | 87 | 58 | 44 |
| | Borrow 2 | Hole 8 | 4.5-21.0 | 10-496 | L0019C | 24 | 16 | 8 | 4 | 47 | 37 | 12 | | | | LO | 4(1) <3> | Dk Gr Br | | 100 | 98 | 96 | 89 | 58 | 49 |
| * | Borrow 2 | Hole 9 | 6.0-24.0 | 10-497 | L0020C | 28 | 14 | 14 | 2 | 34 | 44 | 20 | | | | LO | 6(6) <7> | Olive Br | | 100 | 99 | 98 | 93 | 75 | 64 * |
| | Borrow 3 | Hole 3 | 0.0-1.5 | 10-498 | L0023A | 36 | 21 | 15 | 5 | 44 | 41 | 10 | 109 | 17 | 2.8 | LO | 6(5) <5> | V Dk Gr | 100 | 97 | 96 | 95 | 89 | 63 | 51 |
| | Borrow 3 | Hole 3 | 1.5-23.0 | 10-499 | L0023B | 25 | 19 | 6 | 9 | 32 | 49 | 10 | | | | SI LO | 4(1) <5> | Lt O Br | 100 | 97 | 93 | 91 | 87 | 71 | 59 |
| | Borrow 3 | Hole 3 | 23.0-26.0 | 10-500 | L0023C | 27 | 19 | 8 | 1 | 23 | 63 | 13 | | | | SI LO | 4(4) <8> | Dark Gr | | | 100 | 99 | 95 | 84 | 76 |
| | Borrow 3 | Hole 3 | 26.0-50.0 | 10-501 | L0023D | 19 | 16 | 3 | 5 | 53 | 34 | 8 | | | | SA LO | 4(0) <1> | Dark Gr | | 100 | 99 | 95 | 80 | 55 | 42 |
| | Borrow 8 | Hole 1 | 0.0-1.5 | 10-569 | R0982A | 48 | 23 | 25 | 3 | 35 | 43 | 19 | | | 3.3 | LO | 7-6(14) <12> | V Dk Gr | 100 | 99 | 98 | 97 | 90 | 72 | 62 |
| | Borrow 8 | Hole 1 | 1.5-16.0 | 10-570 | R0982B | 29 | 14 | 15 | 7 | 33 | 41 | 19 | 121 | 12 | | LO | 6(6) <7> | Lt O Br | 100 | 96 | 94 | 93 | 85 | 70 | 60 |
| | Borrow 8 | Hole 1 | 16.0-19.0 | 10-571 | R0982C | 22 | 13 | 9 | 4 | 54 | 30 | 12 | 124 | 11 | | SA LO | 4(1) <1> | Lt O Br | | 100 | 98 | 96 | 85 | 57 | 42 |
| * | Borrow 8 | Hole 1 | 19.0-25.0 | 10-572 | R0982D | 26 | 13 | 13 | 4 | 42 | 37 | 17 | | | | LO | 6(4) <5> | Lt O Br | | 100 | 98 | 96 | 87 | 65 | 54 * |
| * | Borrow 8 | Hole 1 | 25.0-28.0 | 10-573 | R0982E | 48 | 18 | 30 | 3 | 25 | 34 | 38 | | | | CL LO | 7-6(20) <17> | Dark Gr | 100 | 99 | 98 | 97 | 91 | 79 | 72 * |
| | Borrow 8 | Hole 1 | 28.0-30.0 | 10-574 | R0982F | 21 | 12 | 9 | 5 | 52 | 31 | 12 | | | | SA LO | 4(1) <2> | Lt O Br | 100 | 99 | 97 | 95 | 85 | 59 | 43 |
| | Borrow 8 | Hole 1 | 30.0-35.0 | 10-575 | R0982G | 20 | 13 | 7 | 8 | 53 | 28 | 11 | | | | SA LO | 4(0) <1> | Dk Gr Br | | 100 | 97 | 92 | 78 | 54 | 39 |
| * | Borrow 8 | Hole 1 | 35.0-50.0 | 10-576 | R0982H | 24 | 12 | 12 | 9 | 37 | 38 | 16 | | | | LO | 6(3) <5> | V Dk Gr Br | 100 | 99 | 96 | 91 | 83 | 65 | 54 * |
| | Borrow 8 | Hole 3 | 0.0-3.0 | 10-577 | R0984A | 48 | 24 | 24 | 0 | 28 | 53 | 19 | | | 3.6 | SI LO | 7-6(17) <14> | Black | | | | 100 | 95 | 79 | 72 |
| | Station | Dist. | Layer | Lab No. | S No. | LL | PL | PI | GR | SA | SI | CL | Den | M | CRB | Texture | A (New)<Old> | Color | 3/4 | 3/8 | 4 | 10 | 40 | 100 | 200 |

Samples bracketed by asterisks (*) meet the 'Select' criteria except for a missing proctor

Example of laboratory test results




**Example of Plan and Profiles**

**SPECIFICATION REVISION SUBMITTAL FORM**

| | | |
|---|---|---|
| **Submitted by:** Tom Reis / Eric Johnsen | **Office:** Specifications Section | **Item 24** |
| **Submittal Date:** 11/7/2013 | **Proposed Effective Date:** 2/18/2014 | |
| **Article No.:**<br>**Title:** | **Other:** Supplemental Specifications for Project Management | |

| | | | |
|---|---|---|---|
| **Specification Committee Action:** Approved with changes. | | | |
| **Deferred:** | **Not Approved:** | **Approved Date:** 11/14/2013 | **Effective Date:** 4/15/2014 |

**Specification Committee Approved Text:** See attached Supplemental Specifications for Project Management.

**Comments:** The Office of Contracts requested to make the bid item for Project Management not predetermined. This way the bid item should reflect the Contractor's true costs for complying with the SS. The designer should place the bid item on the project.

**Specification Section Recommended Text:** See attached Draft Supplemental Specifications for Project Management.

**Comments:**

**Member's Requested Change:** **(Do not use 'Track Changes', or 'Mark-Up'. Use ~~Strikeout~~ and Highlight.)**

**Reason for Revision:** The Special Provision for Project Management has been increasingly used on Department projects, including at least three groups of projects in the January 2014 letting that include a total of 16 individual projects.

| | | | | | |
|---|---|---|---|---|---|
| **County or City Input Needed (X one)** | | | **Yes** | **No** X | |
| **Comments:** | | | | | |
| **Industry Input Needed (X one)** | | | **Yes** | **No** X | |
| **Industry Notified:** | **Yes** | **No** | **Industry Concurrence:** | **Yes** | **No** |
| **Comments:** | | | | | |

**SS-12XXX**
**(New)**

Iowa Department of Transportation

**SUPPLEMENTAL SPECIFICATIONS**
**FOR**
**PROJECT MANAGEMENT**

**Effective Date**
**February 18, 2014**

**THE STANDARD SPECIFICATIONS, SERIES 2012, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SUPPLEMENTAL SPECIFICATIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.**

**12XXX.01 DESCRIPTION.**
The Contractor shall provide a Project Manager to perform project management responsibilities as described in this Supplemental Specification.

**12XXX.02 COORDINATION OF SUBCONTRACTORS.**
The Project Manager shall be on the project at the beginning of each phase of work to be performed by a subcontractor. The Project Manager shall coordinate the work of each subcontractor working on the project and shall ensure that the subcontractor understands the scope of work required by the contract documents.

**12XXX.03 COMMUNICATION WITH THE ENGINEER.**
The Project Manager shall be responsible for communicating requests for information regarding details of the contract with the Engineer.

**12XXX.04 DOCUMENTATION OF ITEM PROGRESS.**

**A.** The Project Manager, or designated representative, shall take and record item measurements and perform calculations to determine pay quantities for invoicing work performed. The items shall be measured as defined in the Method of Measurement specified for each item. The measurements shall be accurate to the nearest 0.1 unit unless otherwise specified in the contract documents.

**B.** As a minimum, the following information shall be included for all item quantity records and measurements:
- Project Number
- Proposal Line No. and Item Code
- Date the work was performed
- Name of contractor/subcontractor performing the work
- Location of the work
- Measured quantity
- Calculations made to arrive at the quantity
- Remarks and/ or supporting sketch as needed to clearly define the work performed and quantity measured
- Names of persons measuring the work

- Identification of whether the measurement is interim or final
- Signed certification statement by the persons taking the measurements, performing the calculations, and submitting them for payment that the measurement and calculations are correct.

**C.** The Contracting Authority will make available the item forms that shall be used for recording item progress. The Contractor may submit alternative forms to the Engineer for approval.

**D.** When the method of measurement requires weighing or volume measurement in the hauling vehicle, the Project Manager, or designated representative, shall collect the scale tickets and record the location and placement of the material. The Project Manager shall furnish the original truck scale tickets and a signed, written summary of the delivery of the material to the Engineer at the end of each working day.

**E.** For lump sum items, the records shall support invoiced progress payments for pay estimates.

**F.** Unless otherwise specified, the item measurement shall be made when the work is in place and complete. When the work is not complete, the item measurement records shall be submitted as interim measurements.

**G.** The quantities submitted for payment by the Project Manager shall not include measurements for quantities of work performed outside the scope of work included in the contract without written authorization from the Engineer. The Project Manager shall not submit quantities of work performed to establish or remove plant sites, storage areas, or temporary areas used for Contractor operations.

**H.** Project Manager shall submit item measurement records to the Engineer by the end of the following working day, or before subsequent work prevents verification of completed quantities, whichever occurs first.

**I.** When the quantity of work required for an item exceeds the contract quantity, the Project Manager shall notify the Engineer, in writing, that extra work is being performed. The notification shall include the location and an estimate of the quantity of extra work.

**J.** When extra work, as defined in Article 1109.03, B, of the Standard Specifications, is required, the Project Manager shall notify the Engineer, in writing, of the project number, quantity, contractor that will perform the work, and proposed cost settlement of extra work prior to beginning work. Project Manager and Engineer must agree on quantity and cost before extra work is performed. For unusual circumstances, Contractor may proceed with work upon verbal agreement. The Engineer will issue a change order within 3 working days of the agreement. Contractor shall promptly return the signed change order to ensure prompt payment for extra work.

**K.** The Project Manager and Engineer shall agree on a tracking system that will ensure mutual agreement on the status of all change orders.

**L.** The Engineer will randomly select quantities for verification. If discrepancies between quantities furnished by the Project Manager and verified by the Engineer occur, Project Manager and Engineer must reconcile differences before payment is processed. The Project Manager shall arrange to have the items in question remeasured and resubmitted if it is determined the original measurement included unacceptable or incomplete quantities of work. In the event the Project Manager, or designated representative, repeatedly fails to perform measurements as required, the Engineer will measure all quantities, and reduce final payment for the item, Project Management.

**M.** If the Engineer withholds quantities for payment, the Project Manager will be provided the details, quantity, and reason for withholding payment. The Project Manager shall correct all deficiencies that have resulted in the withholding of payment within 2 weeks.

**12XXX.05 SUBMISSION OF MATERIAL APPROVAL DOCUMENTATION.**
Project Manager shall maintain a Material Approval Record. This record shall include all material approval documentation as required for the basis of acceptance by Materials I.M. 204 except for material approved by visual inspection or tests performed by the Engineer. This includes certification statements for all certified materials incorporated in the project. For materials approved by brand name from an approved source, the Project Manager, or designated representative, shall document the brand name, producer, quantity, and appropriate Materials I.M. for the material incorporated. Copies of these documents shall be provided to the Engineer when reporting item progress for progress payments.

**12XXX.06 FALSE STATEMENTS.**
The Contractor shall inform all personnel performing project management activities of the following provisions regarding the falsification of reports and certifications:

- FHWA 1273, IX False Statements;
- Code of Iowa 714.8, Subsection 3, Fraudulent Practices; and
- Article 1102.03, C, 5, of the Standard Specifications; Imposition of Increase in Bidder Qualification Requirements, Suspension, and Disqualification.

**12XXX.07 METHOD OF MEASUREMENT AND BASIS OF PAYMENT.**

**A.** The Lump Sum price for Project Management shall be full compensation for coordinating, communicating, measuring, recording, and submitting the required documentation for all projects on the contract. Final payment may be reduced for failure to perform these requirements.

**B.** Progress payments for this item will be made at the same rate as the percent of work completed.