TO: REGIONAL ENGINEERS AND BUREAU CHIEFS IN THE OFFICE OF HIGHWAYS PROJECT IMPLEMENTATION AND REINFORCEMENT BAR AND DOWEL BAR PRODUCERS

SUBJECT: REINFORCEMENT BAR AND/OR DOWEL BAR PLANT CERTIFICATION PROCEDURE

1.0 PURPOSE

1.1 To establish procedures whereby reinforcement bars and/or dowel bars furnished by a Manufacturer or Supplier will be accepted for use on Department projects.

2.0 SCOPE

2.1 This procedure is available to all Manufacturers and Suppliers of reinforcement bars and/or dowel bars.

3.0 REFERENCES AND AUTHORITY

3.1 IDOT Standard Specifications for Road and Bridge Construction.

3.2 National Transportation Product Evaluation Program (NTPEP), “Standard Practice for NTPEP Evaluation of Reinforcing Steel (SP01)”.

3.3 ASTM A706/A706M, “Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement”.

3.4 AASHTO M227/M227M, "Steel Bars, Carbon, Merchant Quality, Mechanical Properties".

4.0 DEFINITIONS

AASHTO - American Association of State Highway and Transportation Officials.


BUREAU - Central Bureau of Materials (CBM), Illinois Department of Transportation.

CERTIFIED MILL ANALYSIS - A document prepared by the Manufacturer that lists all chemical and physical test results for reinforcement or dowel bars as required by the
applicable Specifications. The following shall also be included in addition to any other data deemed necessary by the Manufacturer:

1. **Producer** name and address
2. Type and grade of reinforcement or dowel bar
3. Heat number
4. Authorized signature of person responsible for Quality Control
5. Date and location where steel was melted in the United States
6. Date reinforcement or dowel bars were rolled
7. Date document printed

**CORRECTIVE ACTION REPORT (CAR)** - A procedure used to originate a corrective action. It is used as response to a defect. In simple words, it means an action/actions adopted to eliminate the problem from occurring again.

**DEPARTMENT** - Illinois Department of Transportation (IDOT), including its Districts and Central Bureau offices.

**DISQUALIFIED PLANT** - A Plant that is not qualified by the Bureau to ship reinforcement bars and/or dowel bars for immediate use on Department projects.

**DISTRICT** - District office, Illinois Department of Transportation.

**ENGINEER** - Chief Engineer of the Department of Transportation of the State of Illinois, or authorized representative as defined in Section 101 of the Standard Specifications.

**INDEPENDENT ASSURANCE (IND) SAMPLE** - A sample used to provide an independent check on the reliability of the Manufacturer’s Quality Control program.

**INSPECTOR** - The authorized representative of the Engineer assigned to make detailed inspection of any or all portions of the work, material, product, etc., as applicable.

**INVESTIGATION (INV) SAMPLE** - A destination sample used to verify the acceptability of reinforcement or dowel bars from a Plant or Supplier.

**MANUFACTURER** - A term synonymous with Producer.

**MMI** - Manual for Material Inspection

**MISTIC** - Materials Integrated System for Test Information and Communication. A Department-wide database containing materials inspection and test information.

**NTPEP** - National Transportation Product Evaluation Program.

**NTPEP COMPLIANT** - A Plant which is listed by NTPEP as being compliant with its evaluation program for reinforcing steel Manufacturers.
**PLANT** - A Producer's facility or mill for manufacturing or fabricating products such as reinforcement or dowel bars that are employed on Department projects.

**PRELIMINARY (PRE) SAMPLE** - A sample used to determine, in advance, if the reinforcement or dowel bar will comply with the Specifications.

**PROBATIONARY PLANT** - A Plant that is qualified by the Bureau to ship reinforcement bars and/or dowel bars for immediate use on Department projects on a conditional basis.

**PROCESS CONTROL (PRO) SAMPLE** - A sample used for the purpose of controlling production of reinforcement or dowel bars proposed for incorporation in Department projects.

**PRODUCER** - An individual or business entity providing materials and/or products for performance of prescribed work.

**QUALIFIED PERSONNEL** - Personnel with demonstrated capability to perform applicable production tasks, inspection and testing.

**QUALIFIED PLANT** - A Plant that is qualified by the Bureau to ship reinforcement bars and/or dowel bars for immediate use on Department projects.

**QUALITY CONTROL** - The sum total of activities performed by a Producer, Contractor, Consultant, Manufacturer, etc. to make sure materials; manufactured, fabricated or constructed items; processes; products; designs; conducted test procedures; etc. will satisfy the requirements of the Specifications, Quality Control program, etc., as applicable.

**SPECIFICATIONS** - Specifications for materials; manufactured, fabricated or constructed items; processes; products; designs; conducted test procedures, etc. which includes the Standard Specifications, supplemental specifications and recurring special provisions, highway standards, shop drawings, contract plans, project special provisions, AASHTO Specifications, ASTM Specifications, etc., as applicable.

**SISTER SAMPLE** - A term synonymous with Split Sample.

**SPLIT SAMPLE** - A sample in which half the material is tested by the Bureau or NTPEP, and the other half is tested by the Manufacturer.

**STANDARD SPECIFICATIONS** - The Department's Standard Specifications for Road and Bridge Construction.

**STATE** - The state of Illinois.

**SUPPLIER** - A company that supplies materials or products such as reinforcement or dowel bars that it does not manufacture or fabricate.
5.0 REINFORCEMENT BAR AND DOWEL BAR ACCEPTANCE PROCEDURES

5.1 Reinforcement bars and dowel bars will be accepted according to the Specifications and this policy memorandum.

5.2 Qualified Plant Procedure. In order to supply reinforcement bars and/or dowel bars for use on Department projects, a Manufacturer’s Plant shall be approved by the Bureau. Requirements for the Qualified Plant Procedure are contained in Section 6 of this policy memorandum.

5.3 Qualified Plant List. The Bureau will maintain a “Qualified Producer List of Reinforcement and Dowel Bar Plants” on the internet which will indicate the Qualified Plants that meet the requirements of this policy memorandum. This list will include the name, location, and Producer/Supplier Number of each Qualified Plant. Other information, as appropriate, will also be provided on the list. Qualified Plants may ship reinforcement and/or dowel bars for immediate use on Department projects.

5.4 The Resident Engineer will make a positive identification between bar identification marks, or I.D. tags, and the Qualified Plant list when reinforcement and/or dowel bars are delivered to the jobsite. See also Section 7.1. Reinforcement and/or dowel bars from a Qualified Plant or Supplier will be accepted and entered into the MISTIC reporting system by the District Materials Engineer.

5.5 Suppliers shall only supply reinforcement and/or dowel bars from Qualified Plants.

6.0 QUALIFIED PLANT PROCEDURE

6.1 Preliminary Approval.

6.1.1 A Manufacturer requesting qualification shall provide or have available the following to the Bureau:

1. The Plant name and location

2. A list of the reinforcement bars and/or dowel bars manufactured by the Plant

3. A Certified Mill Analysis not greater than 2 months old at the time of application for all reinforcement and/or dowel bars manufactured by the Plant and listed in Item 2 of this section

4. A certification the Plant production meets the requirements of Section 3.0 for all products listed in Item 2 of this section

6.1.2 NTPEP Compliance. At the time of application for approval by the Bureau, the Manufacturer shall either be listed as NTPEP Compliant, or be in the process of becoming listed as NTPEP Compliant as determined by the Bureau.

6.1.2.1 Final Qualified Plant status will not be granted by the Bureau until the Manufacturer is listed as NTPEP Compliant.
6.2 Quality Control Requirements for Qualified Plants.

1. The Manufacturer shall establish and maintain Quality Control policies and procedures for production, sampling and testing of reinforcement and/or dowel bars. The Bureau shall be notified of any changes in the Manufacturer’s Quality Control program.

2. The Plant laboratory test equipment shall be maintained in good working order and calibrated annually according to SP01.

3. Qualified Personnel shall perform applicable production tasks, inspections, and testing.

6.3 Inspection, Sampling, and Testing Procedures.

6.3.1 Sampling, testing and inspection procedures will not begin until the requirements of Section 6.1 of this policy memorandum have been met as determined by the Bureau.

6.3.2 Inspection. An Inspector from the Bureau will conduct a scheduled visit to inspect the laboratory facilities for the Plant; the Plant manufacturing processes; the Plant storage facilities; and the Quality Control policies, procedures, and practices performed at the Plant (See also Section 6.2). Access to all necessary Plant facilities and records (i.e., test, Quality Control, etc.) shall be made available to the Inspector. The Manufacturer shall be responsible for payment of transportation, per diem (meals), lodging, and incidental travel costs incurred by the Inspector if the trip from the Bureau to the Plant, the Plant inspection, and the return trip to the Bureau cannot be completed within one day’s normal work hours of 8:00 AM to 4:30 PM. Reimbursement for travel costs shall be provided no later than 30 calendar days after receipt of costs submitted by the Department.

6.3.3 Sampling. During the Plant inspection or at another prearranged date and time, the Inspector or a representative from NTPEP (as determined by the Bureau) will select Preliminary (PRE) Samples and witness bend tests by the Manufacturer. The material to be sampled will be selected from the sizes, grades and heats in stock.

PRE Samples for testing conducted by the Manufacturer, and the Bureau or NTPEP shall be Split Samples or Sister Samples except for bend test samples. Specimens sent to the Bureau or NTPEP (as determined by the Bureau) for testing shall contain all the markings normally used by the Manufacturer. The Manufacturer shall assume the cost to deliver the samples to the Bureau or NTPEP. PRE Samples shall be obtained from 3 different reinforcement and/or dowel bars from 10 different heats. Samples shall be numbered 1 through 30 and marked on each end in such a manner as to ensure traceability. For the bend test, 1 reinforcement bar will be sampled per heat and shall be tested at the Plant according to Section 6.3.4. When feasible, each selected heat shall be of a different bar or dowel size. Sample sizes, lengths and other information are detailed in Appendix A.
6.3.4 Testing. The Manufacturer shall test its portion of the 30 PRE Samples according to the Test/Measurement schedule outlined in Table 1 for reinforcement bars. The Manufacturer shall test its portion of the 30 PRE Samples according to the Test/Measurement schedule outlined in Table 2 for dowel bars. The test results shall be signed and submitted to the Bureau or NTPEP, as determined by the Bureau.

Table 1. Testing and Conformance Requirements for Reinforcement Bars

<table>
<thead>
<tr>
<th>Test/Measurement</th>
<th>Conformance Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight/Length, (ASTM A706 Section 11 &amp; Table 1), %</td>
<td>Min 94% Nominal Weight</td>
</tr>
<tr>
<td>Deformation Height, (ASTM A706 Sections 7 &amp; 8, Table 1), in.</td>
<td>Min Avg Height from Table 1</td>
</tr>
<tr>
<td>Deformation Spacing, (ASTM A706 Section 7 &amp; 8, Table 1), in.</td>
<td>Max Avg Spacing from Table 1</td>
</tr>
<tr>
<td>Yield Strength, (ASTM A706 Section 9, Table 2; IDOT Std. Specs. 1006.10(a)(1) a. &amp; c.), psi</td>
<td>Min 60000 Max 78000</td>
</tr>
<tr>
<td>Tensile Strength, (ASTM A706 Section 9, Table 2; IDOT Std. Specs. 1006.10(a)(1) b.), psi</td>
<td>Min 80000 &amp; Min 1.2 x Measured Yield Strength</td>
</tr>
<tr>
<td>Elongation, (ASTM A706 Section 9, Table 2), % in 8 in.</td>
<td>Min. from Table 2¹</td>
</tr>
<tr>
<td>Bend Test, (ASTM A706 Section 10, Table 3; IDOT Std. Specs. 1006.10(a)(1) e.), Pass/Fail</td>
<td>No Cracking of Outside Radius as Determined by the Inspector</td>
</tr>
</tbody>
</table>

¹Elongation for Straightened Bars from Coils (#3 through #6) is Min. 9% according to IDOT Std. Specs. 1006.10(a)(1) c.
Table 2. Testing and Conformance Requirements for Dowel Bars

Sample #: A number from the 1st to the 30th sample
Dowel Diameter: inches
Grade: 70, 75, or 80
Heat #: Manufacturer heat number the sample came from
Sample Weight: Pounds
Sample Length: Inches
Sample Weight/ft: lbs/ft

<table>
<thead>
<tr>
<th>Test/Measurement</th>
<th>Conformance Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Strength, (AASHTO M227), ksi</td>
<td>Grade 70: Min 39</td>
</tr>
<tr>
<td></td>
<td>Grade 75: Min 41</td>
</tr>
<tr>
<td></td>
<td>Grade 80: Min 44</td>
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<tr>
<td>Tensile Strength, (AASHTO M227), ksi</td>
<td>Grade 70: Min 70 Max 85</td>
</tr>
<tr>
<td></td>
<td>Grade 75: Min 75 Max 90</td>
</tr>
<tr>
<td></td>
<td>Grade 80: Min 80</td>
</tr>
<tr>
<td>Elongation, (AASHTO M227), % in 2 or 8 in. Gauge Length</td>
<td>Grade 70: 14 for 8 in. Gauge 18 for 2 in. Gauge</td>
</tr>
<tr>
<td></td>
<td>Grade 75: 14 for 8 in. Gauge 18 for 2 in. Gauge</td>
</tr>
<tr>
<td></td>
<td>Grade 80: 13 for 8 in. Gauge 17 for 2 in. Gauge</td>
</tr>
</tbody>
</table>

The Bureau or NTPEP (as determined by the Bureau) will test its portion of the 30 PRE Samples according to the Test/Measurement schedule outlined in Table 1 for reinforcement bars. Measurement of deformation spacing and height as well as the bend test will be conducted by the Bureau at its discretion. If the Bureau elects to conduct the bend test, added sampling shall be according to Section 6.3.3. The Bureau or NTPEP (as determined by the Bureau) will test its portion of the 30 PRE Samples according to the Test/Measurement schedule outlined in Table 2 for dowel bars.

6.4 Sample, Heat, and Laboratory Comparison Assessment Criteria. Results from the tests outlined in Table 1 or Table 2, as applicable, on the PRE Samples conducted by the Manufacturer will be evaluated for excessive variation from the tests results on the PRE Samples conducted by the Bureau or NTPEP according the criteria outlined in Section 6.4.1.

Test results on the PRE Samples will be evaluated for conformance with Table 1 or Table 2, as applicable, according to the criteria outlined in Section 6.4.2.

6.4.1 Laboratory Comparison Requirements.

6.4.1.1 Laboratory Comparison Requirements for Individual PRE Split Sample Results. The test results for each of the individual 30 PRE Split Samples shall vary between laboratories by not more than the following:

1. Unit Weight 1.0%
2. Yield Strength 10.0%
3. Tensile Strength 10.0%
4. Elongation 4.0%

1At the discretion of the Bureau, yield strength comparisons may be waived for coiled reinforcement bars.

6.4.1.2 Laboratory Comparison Requirement for Heat Average PRE Split Sample Results. The average test results from the 3 PRE Split Samples for each heat shall vary between laboratories by not more than the following:

1. Unit Weight 1.0%
2. Yield Strength 4.0%
3. Tensile Strength 4.0%
4. Elongation 3.0%

1At the discretion of the Bureau, yield strength comparisons may be waived for coiled reinforcement bars.

6.4.1.3 Failure of the Manufacturer to meet the requirements of Section 6.4.1.1 or 6.4.1.2 will result in the Plant not achieving qualified status. However, at the discretion of the Bureau, a heat or heats may be re-sampled, re-tested and re-assessed according to Section 6.5.

6.4.2 Specification Conformance Requirements.

6.4.2.1 Conformance Requirements detailed in Table 1 or Table 2, as applicable, shall apply to all tests conducted by the Bureau or NTPEP, as well as all the tests conducted by the Manufacturer.

6.4.2.2 For determination of Plant qualification, the test results obtained by the Bureau or NTPEP supersede those of the Manufacturer.

6.4.2.3 All of the 30 PRE Split Samples test results shall meet the Conformance Requirements outlined in Table 1 or Table 2, as applicable.

6.4.2.4 Failure of the Manufacturer to meet to the requirements of Sections 6.4.2.1 through 6.4.2.3 will result in the Plant not achieving qualified status. However, at the discretion of the Bureau, a heat or heats may be re-sampled, re-tested and re-assessed according to Section 6.5.

6.5 Re-Sampling, Re-Testing, and Re-Assessment Criteria.

6.5.1 Inter-Laboratory.

6.5.1.1 At the discretion of the Bureau, heats that do not conform to the requirements of Section 6.4.1.1 may be re-sampled from the same heat and re-tested according to Section 6.3. Re-assessment will be according to Section 6.4.1.1 and 6.4.1.2.
6.5.1.2 At the discretion of the Bureau, heats that do not conform to the requirements of Section 6.4.1.2 may be re-sampled from the same heat and re-tested according to Section 6.3. Re-assessment will be according to Section 6.4.1.1 and 6.4.1.2.

6.5.1.3 Heats that have been re-sampled and re-tested according to Section 6.5.1.1 and/or Section 6.5.1.2 shall also meet the requirements of Section 6.4.2.

6.5.2 Specifications.

6.5.2.1 At the discretion of the Bureau, heats that do not conform to the requirements of Section 6.4.2 may be re-sampled from the same heat and re-tested according to Section 6.3.

6.5.2.2 Re-assessment of re-sampled and re-tested heats will be according to Section 6.4.2. At the discretion of the Bureau, re-assessment may also be according to 6.4.1.1 and/or 6.4.1.2.

6.5.3 Subsequent Re-Sampling, Re-Testing, and Re-Assessment Criteria. Heats that do not meet the requirements of Section 6.5.1 and/or Section 6.5.2 will be rejected, and should not be subsequently re-sampled, re-tested and re-assessed unless otherwise authorized by the Bureau.

6.6 Final Plant Qualification. The Bureau will notify the Manufacturer in writing if the request for qualification is approved or denied. A request may be denied if the Manufacturer fails to meet any of the requirements outlined in Sections 6.1 through 6.5. If the request for qualification is denied, the Manufacturer shall meet the requirements of Sections 7.7.3, 7.7.4, 7.7.5, 7.7.6, and 7.7.8 Item 3 in order to re-apply for qualification.

7.0 REQUIREMENTS DURING PERIOD OF QUALIFICATION

7.1 Record and Reporting Requirements.

1. Records of production control tests shall be maintained by the Manufacturer for a minimum period of 5 years and shall be made available to the Bureau upon request.

2. Copies of shipping orders, bills of lading, and invoices shall be maintained by the Manufacturer or Supplier for a minimum period of 5 years. Copies of shipping orders, bills of lading, and invoices shall be provided to the Resident Engineer, the District Materials Engineer, and the Bureau upon delivery to a jobsite.

7.2 NTPEP Compliance. If a Plant falls out of NTPEP Compliance, it will be designated as Disqualified. In order to become Qualified once again, Disqualified Plants shall meet the requirements of Section 7.7 and become NTPEP Compliant once again.

7.3 Inspection. During the period of qualification, a Plant may be inspected according to Section 6.3.2 at the discretion of the Bureau. If a Plant fails the inspection, it will be designated as either Disqualified or Probationary at the discretion of the Bureau. In order to become Qualified once again, Disqualified or Probationary Plants shall meet the requirements of Section 7.7.
7.4 Process Control Sampling.

7.4.1 For every 200 tons (400,000 lbs) of reinforcement and/or dowel bars supplied by a Manufacturer to the Department or once per year, whichever comes first, Process Control (PRO) Samples will be taken by a District.

7.4.2 The running total of reinforcement and/or dowel bars supplied to the Department will be tracked by the Bureau using the copies of shipping orders, bills of lading, or invoices supplied by the Manufacturer or Supplier to the Bureau as required by Section 7.1 Item 2.

7.4.3 Sampling at the jobsite, fabricator, or any other location by a District will be as directed by the Bureau.

7.4.4 The Bureau will instruct the District as to the number and sizes of reinforcement and/or dowel bar PRO Samples to collect. A reinforcement bar sample is considered to be 2 – 6 ft length bars of the same size and both shall include mill markings per the MMI. A dowel bar sample is considered to be 2 – 6 ft length dowels. However, 4 – 30 in. dowels (min.) are also acceptable. The samples shall be sent to the Bureau for testing.

7.5 Process Control Testing and Assessment Criteria.

7.5.1 All tests on the PRO Samples collected according to Section 7.4 will be conducted by the Bureau, and all results shall meet the Conformance Requirements in Table 1 and/or Table 2, as applicable.

7.5.2 Failure of the Manufacturer to meet to the requirements of Section 7.5.1 will result in the Plant being designated as Disqualified or Probationary at the discretion of the Bureau. However, at the discretion of the Bureau; PRO Samples may re-sampled, re-tested and re-assessed according to Section 7.6.

7.6 Process Control Re-Sampling, Re-Testing, and Re-Assessment Criteria.

7.6.1 Re-sampling shall be according to Sections 7.4.3 and 7.4.4.

7.6.2 Re-testing shall be according to Section 7.5.1. Re-assessment shall be according to Sections 7.5.1 and 7.6.3.

7.6.3 If all the re-tested PRO Samples meet the requirements of Section 7.5.1, the Manufacturer will remain as a Qualified Plant. If at least 1 of the test results does not meet the Conformance Requirements in Table 1 or Table 2, as applicable, the Plant will be designated as either Disqualified or Probationary at the discretion of the Bureau. In order to become Qualified once again, Disqualified or Probationary Plants shall meet the requirements of Section 7.7.

7.7 Disqualification, Probation, and Corrective Action.
7.7.1 **Disqualified Plants** will be immediately removed from the **Qualified Plant** List and shall not supply reinforcement and/or dowels bars to **Departmental** projects.

7.7.2 **Probationary Plants** will not be immediately removed from the **Qualified Plant** List and may supply reinforcement and/or dowel bars to **Departmental** projects on a conditional basis.

7.7.3 **Disqualified** and **Probationary Plants** shall submit a **Corrective Action Report (CAR)** (See Section 7.7.4) for each identified issue to the **Bureau** within 15 business days of the date of disqualification or probation. Failure to submit a CAR or CARs within this time frame will result in the **Plant** having to undergo the full **Qualified Plant** Procedure outlined in Section 6.0 as well as repeat Section 7.7 in order to become **Qualified** once again. In addition, **Probationary Plants** will be designated as **Disqualified Plants**.

7.7.4 CARs shall contain detailed descriptions of the issue to be addressed, the course of action to be taken to remedy the issue, and a timeline for when this course of action will be accomplished. See also Appendix B. A separate CAR is required for each identified issue to be addressed by the **Manufacturer**.

7.7.5 The **Bureau** will determine if a proposed CAR is acceptable and may revise or amend a CAR before approval.

7.7.6 The **Bureau** will determine when and/or if the issue addressed in a CAR has been remedied.

7.7.7 If the **Bureau** determines that each issue has been remedied within the timelines stipulated in each submitted and approved CAR, the **Manufacturer** will be reinstated as a **Qualified Plant**.

7.7.8 If the **Bureau** determines that an issue has not been remedied within the timeline stipulated in a CAR, the **Manufacturer** will either:

1. Remain a **Probationary** or **Disqualified Plant** until the **Bureau** determines the issue addressed in a CAR has been remedied
2. Be declared a **Disqualified Plant** until the **Bureau** determines the issue addressed in a CAR has been remedied
3. Be required to undergo the full **Qualified Plant** Procedure outlined in Section 6.0, and, at the discretion of the **Bureau**, repeat Section 7.7 in order to become **Qualified** once again

7.8 **Independent Assurance (IND) and Investigation (INV) Sampling, Testing and Assessment Criteria.**

7.8.1 **IND or INV Samples** may be taken at any time during the period of qualification.

7.8.2 **IND Sampling** will be according to Section 7.4.3, or as otherwise determined by the **Bureau**.
7.8.3 **INV Sampling** will be as determined by the **Bureau** or **District**.

7.8.4 **IND or INV Sample** testing and assessment will be according to Section 7.5.

7.8.5 **IND or INV re-Sampling**, re-testing, and re-assessment will be according to Sections 7.6, 7.8.2, and 7.8.3.

8.0 **REQUALIFICATION PROCEDURE**

8.1 **Procedure.** Requalification shall be according to Section 6.0.

8.2 **Interval.** Qualified Plants shall be requalified on an annual basis or as determined by the **Bureau**. The **Bureau** will inform the **Manufacturer** when the requalification procedure will commence.

9.0 **CLOSING NOTICE**

Archived versions of this policy memorandum may be examined by contacting the **Bureau**.

The current **Bureau** Chief of Materials has approved this policy memorandum. Signed documents are on file with the **Bureau**.
Appendix A: Sampling Outline (Section 6.3.3)

<table>
<thead>
<tr>
<th>Heat #1</th>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
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<tr>
<td></td>
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<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
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<td>3</td>
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<td>2 @ 30 Inches Long</td>
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Bend Test Sample Corresponding to Heat Samples 1-3
(Reinforcement Bars Only) – Length Determined by Bar Size

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<tr>
<th>Heat #2</th>
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<th>Mill Samples</th>
<th>Sister or Split Samples</th>
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Bend Test Sample Corresponding to Heat Samples 4-6
(Reinforcement Bars Only) – Length Determined by Bar Size

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<td></td>
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<tr>
<td></td>
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Bend Test Sample Corresponding to Heat Samples 7-9
(Reinforcement Bars Only) – Length Determined by Bar Size

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<tr>
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<th>Sample #</th>
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Bend Test Sample Corresponding to Heat Samples 10-12
(Reinforcement Bars Only) – Length Determined by Bar Size

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</table>

Bend Test Sample Corresponding to Heat Samples 13-15
(Reinforcement Bars Only) – Length Determined by Bar Size

<table>
<thead>
<tr>
<th>Heat #6</th>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
</tbody>
</table>

Bend Test Sample Corresponding to Heat Samples 16-18
(Reinforcement Bars Only) – Length Determined by Bar Size
### Appendix A: Sampling Outline (Section 6.3.3)(Cont.)

#### Heat #7

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>20</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>21</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
</tbody>
</table>

Bend Test Sample Corresponding to Heat Samples 19-21
(Reinforcement Bars Only) – Length Determined by Bar Size

#### Heat #8

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>23</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>24</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
</tbody>
</table>

Bend Test Sample Corresponding to Heat Samples 22-24
(Reinforcement Bars Only) – Length Determined by Bar Size

#### Heat #9

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>26</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>27</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
</tbody>
</table>

Bend Test Sample Corresponding to Heat Samples 25-27
(Reinforcement Bars Only) – Length Determined by Bar Size

#### Heat #10

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Mill Samples</th>
<th>Sister or Split Samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>29</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
<tr>
<td>30</td>
<td>1 @ 30 inches Long</td>
<td>2 @ 30 Inches Long</td>
</tr>
</tbody>
</table>

Bend Test Sample Corresponding to Heat Samples 28-30
(Reinforcement Bars Only) – Length Determined by Bar Size
ILLINOIS DEPARTMENT OF TRANSPORTATION  
Corrective Action Report  

Complete and submit to the Central Bureau of Materials via e-mail (Scott.Hughes@illinois.gov or Michael.Brydl@illinois.gov) within 15 business days of transmittal of this form.

<table>
<thead>
<tr>
<th>Plant and Location:</th>
<th>Date of Transmittal:</th>
</tr>
</thead>
</table>

Describe in the areas provided the corrective action taken to resolve the issue. Corrective action of issues includes root cause analysis and a plan to monitor the effectiveness of the corrective action. Attach any supporting documentation (e.g.: modified/new procedures, purchase requests, proof of new training, calibration records, etc.)

### Issue

**Description (to be completed by IDOT):**

### Immediate Action

**Description of the Immediate Action Taken to Prevent Recurrence of Issue (to be completed by Manufacturer):**

### Root Cause Analysis

**Description of the Reason(s) That Allowed the Issue to Happen (to be completed by Manufacturer):**
### Actionable Solution

Description of the Improvements to the Quality Control Program that will be Implemented to Prevent a Similar Occurrence of the Issue. Include a Timeline for Implementation (to be completed by Manufacturer):

<table>
<thead>
<tr>
<th>Actionable Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the Improvements to the Quality Control Program that will be Implemented to Prevent a Similar Occurrence of the Issue. Include a Timeline for Implementation (to be completed by Manufacturer):</td>
</tr>
</tbody>
</table>

### Planned Monitoring Activities

Description of the Plans to Monitor the Effectiveness of the Actionable Solution Given Above (to be completed by Manufacturer):

<table>
<thead>
<tr>
<th>Planned Monitoring Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the Plans to Monitor the Effectiveness of the Actionable Solution Given Above (to be completed by Manufacturer):</td>
</tr>
</tbody>
</table>