TO: REGIONAL ENGINEERS AND BUREAU CHIEFS IN THE OFFICE OF HIGHWAYS PROJECT IMPLEMENTATION, AND WELDED WIRE REINFORCEMENT/BAR MAT PRODUCERS

SUBJECT: WELDED WIRE REINFORCEMENT/BAR MAT PLANT CERTIFICATION PROCEDURE

1.0 PURPOSE

1.1 To establish procedures whereby welded wire reinforcement (WWR) and/or Bar Mats 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 WWR and/or Bar Mats.

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 Qualification of Highway Product Manufacturers Through the Use of NTPEP Audits (SP01)”.

3.3 National Transportation Product Evaluation Program (NTPEP), “NTPEP Committee Work Plan for Evaluation of Reinforcing Steel Manufacturers”.

3.4 AASHTO M54/M54M (ASTM A184/A184M), “Fabricated Deformed Steel Bar Mats for Concrete Reinforcement”.

3.5 AASHTO M336/M336M (ASTM A1064/A1064M) “Steel Wire and Welded Wire, Plain and Deformed, for Concrete Reinforcement”.

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

This Policy Memorandum supersedes number 23-08.3 dated March 15, 2015

Revised: September 6, 2019

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4.0 DEFINITIONS

AASHTO - American Association of State Highway and Transportation Officials.


BAR MAT - ASTM A706 deformed steel reinforcement bars welded together at right angles to form a sheet or mat.

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

CORRECTIVE ACTION REPORT (CAR) - A procedure used to originate a corrective action. It is used as a 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 WWR 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 WWR or Bar Mats 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 WWR or Bar Mats that are employed on Department projects.

PRELIMINARY (PRE) SAMPLE - A sample used to determine, in advance, if the WWR will comply with the Specifications.

PROBATIONARY PLANT - A Plant that is qualified by the Bureau to ship WWR for immediate use on Department projects on a conditional basis.

PROCESS CONTROL (PRO) SAMPLE - A sample used for the purpose of controlling production of WWR 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 WWR 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.

SUPPLIER - A company that supplies materials or products such as WWR or Bar Mats that it does not manufacture or fabricate.

WWR - Welded Wire Reinforcement.
5.0 WWR AND BAR MAT ACCEPTANCE PROCEDURES

5.1 WWR and Bar Mats will be accepted according to the Specifications and this policy memorandum.

5.2 Reinforcement bars used to fabricate Bar Mats shall be obtained by the Manufacturer from a Department qualified Producer. The Bureau maintains a list of “Certified Reinforcing Bar and/or Dowel Bar Producers” on the internet that indicates which Producers of reinforcement bars are qualified by the Department.

5.3 Qualified Plant Procedure. In order to supply WWR 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.

5.4 Qualified Plant List. The Bureau will maintain a “Qualified Producer List Of Certified Welded Wire Reinforcement” 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 WWR for immediate use on Department projects.

5.5 The Resident Engineer or Inspector will make a positive identification between WWR identification marks, or I.D. tags, and the Qualified Plant list when WWR is delivered to the jobsite, precast concrete Plant, or precast prestressed concrete Plant. See also Section 7.1. WWR from a Qualified Plant or Supplier will be accepted and entered into the MISTIC reporting system by the District Materials Engineer.

5.6 Suppliers shall only supply WWR from Qualified Plants.

5.7 Bar Mats will be accepted via visual inspection at the jobsite, precast concrete Plant, or precast prestressed concrete Plant. The Resident Engineer or Inspector will make a positive identification between reinforcement bar marks or I.D. tags, and the qualified Producer list for reinforcing and/or dowel bars when Bar Mats are delivered to the jobsite (See also Section 5.2). Bar Mats will be accepted and entered into the MISTIC reporting system by the District Materials Engineer.

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 WWR manufactured by the Plant

3. 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 WWR. 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 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. The material to be sampled will be selected from the sizes, grades and heats/lots in stock.

**PRE Samples** for testing conducted by the Manufacturer, and the Bureau or NTPEP shall be Split Samples or Sister Samples. Samples sent to the Bureau or NTPEP (as determined by the Bureau) for testing shall contain identification marks, or I.D. tags. The Manufacturer shall assume the cost to deliver the samples to the Bureau or NTPEP. **PRE Samples** shall be full width sheets obtained from 10 separate lots/heats that span the styles, sizes and grades produced by the Manufacturer. The length of each PRE Sample shall be as determined by the Inspector or a representative from
**NTPEP.** Samples shall be cut into specimens for various tests as detailed in Appendix A. Samples and specimens shall be marked/tagged and numbered in such a manner as to ensure traceability.

6.3.4 **Testing.** The **Manufacturer** shall test its portion of the 10 **PRE Samples** according to the Test/Measurement schedule outlined in Table 1 for plain **WWR.** The **Manufacturer** shall test its portion of the 10 **PRE Samples** according to the Test/Measurement schedule outlined in Table 2 for deformed **WWR.** 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 plain **WWR**

**Sample #: A number from the 1st to the 10th sample**

Longitudinal and Transverse Wire Designation/Size: **W#**

Lot #: **Lot # number the sample came from**

<table>
<thead>
<tr>
<th>Test/Measurement</th>
<th>Conformance Requirement</th>
</tr>
</thead>
</table>
| Diameter, (ASTM A1064 Section 7.1.6, Tables 1 & 8), in.\(^1\) | Permissible Variation from Table 1:  
| < W 5                             | ±0.003                                    |
| W 5 to ≤ W 12                     | ±0.004                                    |
| > W 12 to ≤ W 20                  | ±0.006                                    |
| > W 20                            | ±0.008                                    |
| Tensile, (ASTM A1064 Sections 8.1.1 & 7.1.4.1, Table 5), psi | Min from Table 5                          |
| Bend Test, (ASTM A1064 Sections 8.2 & 7.1.5, Table 7), Pass/Fail | No Cracking of Outside Radius as Determined by the Inspector |
| Weld Shear, (ASTM A1064 Sections 8.3 & 9), lbs\(^2\) | Min 35000 x Nominal Area of Larger Wire in sq. in. |

\(^1\)*See Appendix B for a detailed procedure on diameter measurements.

\(^2\)*If nominal area of smaller wire is less than 40% of nominal area of larger wire, weld shear test does not apply.
Table 2. Testing and Conformance Requirements for deformed WWR

Sample #: A number from the 1st to the 10th sample
Longitudinal and Transverse Wire Designation/Size: D#
Lot #: Lot # number the sample came from

<table>
<thead>
<tr>
<th>Test/Measurement</th>
<th>Conformance Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Weight, (ASTM A1064 Section 7.2.7, Table 3), lb/ft</td>
<td>Permissible Variation from Table 3: 6%</td>
</tr>
<tr>
<td>Tensile, (ASTM A1064 Sections 8.1.1 &amp; 7.2.5.1, Table 10), psi</td>
<td>Min from Table 10</td>
</tr>
<tr>
<td>Bend Test, (ASTM A1064 Sections 8.2 &amp; 7.2.6, Table 11), Pass/Fail</td>
<td>No Cracking of Outside Radius as Determined by the Inspector</td>
</tr>
<tr>
<td>Weld Shear, (ASTM A1064 Sections 8.3 &amp; 9), lbs</td>
<td>Min 35000 x Nominal Area of Larger Wire in sq. in.</td>
</tr>
<tr>
<td>Deformation Spacing, (ASTM A1064 Section 7.2.4), # Deformations/in.</td>
<td>3.5 ≤ Avg # Deform./in. ≤ 5.5</td>
</tr>
<tr>
<td>Deformation Height, (ASTM A1064 Section 7.2.4, Table 3), in.</td>
<td>Min Avg Height from Table 3</td>
</tr>
</tbody>
</table>

1Small wire shall not be less than D 4.
2If nominal area of smaller wire is less than 40% of nominal area of larger wire, minimum weld strength is 800 lb.

If wire is cold drawn at the Plant, the Manufacturer shall demonstrate this process for at least 1 draw down at the Plant in the presence of the Inspector or NTPEP Representative. The reduction in area of the cold drawn wire shall be reported by the Manufacturer.

Measurements by the Manufacturer of deformation height and spacing for deformed wire will only be required for 1 heat/lot unless otherwise directed by the Bureau or NTPEP.

The Bureau or NTPEP (as determined by the Bureau) will test its portion of the 10 PRE Samples according to the Test/Measurement schedule outlined in Table 1 for plain WWR. The Bureau or NTPEP (as determined by the Bureau) will test its portion of the 10 PRE Samples according to the Test/Measurement schedule outlined in Table 2 for deformed WWR. Measurement of deformation spacing and height will be conducted by the Bureau or NTPEP (as determined by the Bureau) at its discretion.

6.4 Sample, Heat, and Laboratory Comparison Assessment Criteria. Results from the tests outlined in Table 1 and/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 and/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 specimens cut from PRE Split Samples shall vary between laboratories by not more than the following:

1. Tensile Strength 10.0%
2. Unit Weight\(^1\) 5.0%

\(^1\)Deformed wire only.

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

1. Tensile Strength 5.0%
2. Unit Weight\(^1\) 2.0%

\(^1\)Deformed wire only.

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 initial qualified status or maintaining current 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 and/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 specimens cut from PRE Split Samples test results shall meet the Conformance Requirements outlined in Table 1 and/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 initial qualified status or maintaining current 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/lots that do not conform to the requirements of Section 6.4.1.1 may be re-sampled from the same heat/lot 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/lots 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/lots 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/lots that do not conform to the requirements of Section 6.4.2 may be re-sampled from the same heat/lot and re-tested according to Section 6.3.

6.5.2.2 Re-assessment of re-sampled and re-tested heats/lots 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/lots 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 Initial 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.

6.7 Plant Requalification. The Bureau will notify the Manufacturer in writing if the request for requalification is approved or denied. A request may be denied if the Manufacturer fails to meet any of the requirements outlined in Sections 6.2 through 6.5, or if the Plant falls out of compliance with NTPEP. If the request for requalification is denied, the Plant will either be designated as 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.
7.0 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 or Inspector, and the District Materials Engineer upon delivery to a jobsite, precast concrete Plant, or precast prestressed concrete Plant.

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 Process Control (PRO) Samples may be taken at any time during the period of qualification.

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

7.4.3 PRO Samples shall be taken according to Appendix C.

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 be 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 7.4.2 and 7.4.3.
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 and/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 WWR to Departmental projects.

7.7.2 Probationary Plants will not be immediately removed from the Qualified Plant List and may supply WWF 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 D. 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 Appendix C, or as otherwise determined by the Bureau.

7.8.3 INV Sampling will be according to Appendix C, or as otherwise 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 Sections 6.2, 6.3, 6.4, 6.5 and 6.7.

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 and Specimen Outline (Section 6.3.3)

### Specimens per Sample Lot/Heat for Plain WWR*  

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th># of Mill Specimens</th>
<th># of Sister or Split Specimens&lt;sup&gt;5&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal Diameter&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4</td>
<td>8 (From Same Wire as Mill Specimens)</td>
</tr>
<tr>
<td>Transverse Diameter&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2</td>
<td>4 (From Same Wire as Mill Specimens)</td>
</tr>
<tr>
<td>Longitudinal Tensile&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4 Across Weld</td>
<td>8 Across Weld</td>
</tr>
<tr>
<td>Transverse Tensile&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2 Across Weld</td>
<td>4 Across Weld</td>
</tr>
<tr>
<td>Longitudinal Weld Shear&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4 Welds</td>
<td>8 Welds</td>
</tr>
<tr>
<td>Bend Test&lt;sup&gt;4&lt;/sup&gt;</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<sup>1</sup>See also Appendix B.  
<sup>2</sup>Specimens selected according to ASTM A1064 Section 8.1.1.  
<sup>3</sup>Specimens selected according to ASTM A1064 Sections 8.3.4 and 11.2.  
<sup>4</sup>Specimen length as determined by the Inspector or NTPEP Representative.  
<sup>5</sup>Split Specimens contain backup specimens.

### Specimens per Sample Lot/Heat for Deformed WWR*  

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th># of Mill Specimens</th>
<th># of Sister or Split Specimens&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal Unit Weight&lt;sup&gt;1&lt;/sup&gt;</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Transverse Unit Weight&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Longitudinal Tensile&lt;sup&gt;2&lt;/sup&gt;</td>
<td>4 Across Weld</td>
<td>8 Across Weld</td>
</tr>
<tr>
<td>Transverse Tensile&lt;sup&gt;2&lt;/sup&gt;</td>
<td>2 Across Weld</td>
<td>4 Across Weld</td>
</tr>
<tr>
<td>Longitudinal Weld Shear&lt;sup&gt;3&lt;/sup&gt;</td>
<td>4 Welds</td>
<td>8 Welds</td>
</tr>
<tr>
<td>Bend Test&lt;sup&gt;1&lt;/sup&gt;</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

<sup>1</sup>Specimen length as determined by the Inspector or NTPEP Representative.  
<sup>2</sup>Specimens selected according to ASTM A1064 Section 8.1.1.  
<sup>3</sup>Specimens selected according to ASTM A1064 Sections 8.3.4 and 11.2.  
<sup>4</sup>Split Specimens contain backup specimens.

*See also Figure A2
Test Demonstrations at Plant During Qualification Procedure

1. Reduction of area for cold drawn wire shall be as directed by the Inspector or NTPEP Representative.

2. Deformation height and spacing – Specimen length 12 in. minimum [sampling may also be required for testing by the Bureau or NTPEP (as determined by the Bureau)].

*Note: The prefix W is for plain wire. The prefix D is for deformed wire.*

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Figure A1 – Industry Standard Nomenclature and Definitions
Figure A2 – Sample Cutting Diagram (Standard WWR Mesh)
Appendix B: Plain Wire Diameter Measurement Procedure [Section 6.3.4 WWR According to ASTM A1064]

1. As shown in Figures B1 (Mesh ≥ 4 in.) and B2 (Mesh < 4 in.), Orientation B is rotated 90° from Orientation A. Three (3) readings shall be obtained at Orientation A and 3 readings shall be obtained at Orientation B at each Location.

2. A single recorded plain steel wire diameter measurement is the average of 6 individual readings at a Location (i.e., the average of Readings A1, A2, A3, B1, B2 and B3 at a Location) as shown Figures B1 (Mesh ≥ 4 in.) and B2 (Mesh < 4 in.).

3. Readings A1 (B1) and A3 (B3) shall be within a distance of ± ½ in. as shown in Figures B1 (Mesh ≥ 4 in.) and B2 (Mesh < 4 in.).

4. Reading A2 (B2) shall be within a distance of ± ¼ in. of Readings A1 (B1) and A3 (B3) as shown in Figures B1 (Mesh ≥ 4 in.) and B2 (Mesh < 4 in.).

5. A minimum of 4 recorded measurements by the Manufacturer shall be taken for longitudinal wires.

6. A minimum of 2 recorded measurements by the Manufacturer shall be taken for transverse wires.

---

**Figure B1** - Mesh Sizes 4 in. x 4 in. and Larger
Figure B2 - Mesh Sizes Smaller Than 4 in. x 4 in.
Appendix C: Sampling and Specimen Outline [Sections 7.4 & 7.8 Welded Wire Reinforcement According to ASTM A1064]

Mesh Sizes Smaller Than 8 in. x 8 in.¹

1 Sample: 3 feet x 3 feet (See also Figure C1)

Mesh Sizes Greater Than or Equal to 8 in. x 8 in.¹

1 Sample: 4 feet x 4 feet (See also Figure C1)

¹If sampling according to Figure C1 is not possible, sampling shall be as directed by the Inspector

Figure C1 - Sample Cutting Diagram (Standard WWR Mesh)
ILLINOIS DEPARTMENT OF TRANSPORTATION
Corrective Action Report

Complete and submit the following form (link embedded) to the Central Bureau of Materials via e-mail (Michael.Brydl@illinois.gov) within 15 business days of notification of Disqualification, Probation, or Denial of Qualification.

<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.)

<table>
<thead>
<tr>
<th>Issue Description (to be completed by IDOT):</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Immediate Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the Immediate Action Taken to Prevent Recurrence of Issue (to be completed by Manufacturer):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Root Cause Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of the Reason(s) That Allowed the Issue to Happen (to be completed by Manufacturer):</td>
</tr>
</tbody>
</table>
## 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>