State of Illinois
Department of Transportation
Bureau of Materials
Springfield

POLICY MEMORANDUM

Revised: May 8, 2024 24-08.7
This Policy Memorandum supersedes number 24-08.6 dated February 6 2020

TO: REGIONAL ENGINEERS AND BUREAU CHIEFS IN THE OFFICE OF HIGHWAYS PROJECT IMPLEMENTATION AND EPOXY COATING PRODUCERS

SUBJECT: EPOXY COATING PLANT CERTIFICATION PROCEDURE

1.0 PURPOSE

To establish procedures whereby epoxy coated steel reinforcing bars, dowel bars, **WWR** and/or **Accessories** 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 epoxy coated steel reinforcement bars, dowel bars, **WWR** and/or **Accessories**.

3.0 REFERNENCES AND AUTHORITY

3.1 IDOT Standard Specifications for Road and Bridge Construction.

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

3.3 ASTM A775/A775M, “Standard Specification for Epoxy-Coated Reinforcing Bars”.

3.4 ASTM A934/A934M, “Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars”.

3.5 AASHTO M227/M227M, “Steel Bars, Carbon, Merchant Quality, Mechanical Properties”.

3.6 ASTM A1078/A1078M, “Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement”.

3.7 AASHTO M54 (ASTM A184), “Fabricated Deformed Steel Bar Mats for Concrete Reinforcement”.

3.8 AASHTO M55 (ASTM A185), “Steel Welded Wire Reinforcement, Plain, for Concrete”.

3.9 AASHTO M221 (ASTM A497), “Steel Welded Wire Reinforcement, Deformed for Concrete Reinforcement”.

3.10 ASTM A884/A884M, “Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement”.

3.11 ASTM D3963 “Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars”.

3.12 Concrete Reinforcing Steel Institute (CRSI), "Voluntary Certification Program for Fusion-Bonded Epoxy Coating Applicator Plants".

3.13 SSPC-PA 2 “The Society for Protective Coatings Paint Application Standard No. 2”.

4.0 DEFINITIONS

AASHTO - American Association of State Highway and Transportation Officials.

ACCESSORIES – Bar splicers, bar couplers, and other miscellaneous epoxy coated steel items.

ASTM - American Society for Testing Materials.

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

CMMS – Construction and Materials Management System. A **Department**-wide database containing construction and materials inspection and test information.

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.

CRSI – Concrete Reinforcing Steel Institute.

CRSI Certified Plant – A **Plant** certified by **CRSI** for epoxy coating steel.

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 epoxy coated reinforcement bars, dowel bars, and/or **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 epoxy coated reinforcement bars, dowel bars, **WWR** and/or **Accessories** from a **Plant** or **Supplier**

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

MISTIC - Materials Integrated System for Test Information and Communication. A **Department**-wide database containing materials inspection and test information. The **Department** transitioned from **MISTIC** to **CMMS** in 2022.

PLANT - A **Producer's** facility or mill for manufacturing or fabricating products such as epoxy coated reinforcement bars, dowel bars, **WWR** and/or **Accessories** that are employed on **Department** projects.

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

PROBATIONARY PLANT - A **Plant** that is qualified by the **Bureau** to ship epoxy coated reinforcement bars, dowel bars and/or **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 epoxy coated reinforcement bars, dowel bars, and/or **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 epoxy coated reinforcement bars, dowel bars, and/or **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.

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

SUPPLIER - A company that supplies materials or products such as epoxy coated reinforcement, dowel bars, **WWR** or **Accessories** that it does not manufacture or fabricate.

WWR – Welded wire reinforcement

5.0 EPOXY COATED REINFORCEMENT BAR, DOWEL BAR, WWR AND ACCESSORY ACCEPTANCE PROCEDURES

6.0 QUALIFIED PLANT PROCEDURE

6.1 Preliminary Approval.

6.1.1 A **Manufacturer** requesting qualification shall provide the following to the **Bureau**:

1. The **Plant** name and location.

2. A list of the reinforcement bars, dowel bars, and **WWR** coated 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 **CRSI Certification.** At the time of application for approval by the **Bureau**, the **Manufacturer** shall either be listed as a **CRSI Certified Plant**, or be in the process of becoming listed as a **CRSI Certified Plant** 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 a **CRSI Certified Plant**.

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 epoxy coated reinforcement, dowel bars and/or **WWR** per the **CRSI Certified Plant** program. 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 as required by the **CRSI Certified Plant** program

3. **Qualified Personnel** shall perform applicable production tasks, inspections, and testing. **Quality Control** inspectors shall successfully complete a 6-hour education program on "Recommended **Quality Control** Practices for the Production of Epoxy Coated Steel Reinforcement" approved by the **Bureau**.

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** will select **Preliminary (PRE) Samples** of straight reinforcement bars and/or dowel bars. The material to be sampled will be selected from the sizes, grades and heats in stock. **Preliminary (PRE) Samples** of custom line (prefabricated) reinforcement bars and/or **WWR** will only be selected if available.

PRE Samples for straight reinforcement bars (**ASTM** A775 and **ASTM** A706) and dowel bars (**ASTM** A1078) shall be obtained from 3 different bars or dowels from 10 different heats. Samples shall be numbered 1 through 30 and tagged with a unique identification number. All specimens cut from a sample bar or dowel shall be marked with that sample's identification number. Each sample shall be from a different bar or dowel size when feasible. Due to the deformation spacing and the probe diameter of the magnetic thickness gage, selected bar sizes should be #6 and greater and selected dowel sizes should be ¾ in. diameter and greater when feasible.

Sample sizes, lengths, bend test re-samples, and other information for straight (unfabricated) reinforcement bars according to **ASTM** A775 are detailed in Appendix A. At the discretion of the **Bureau**, sampling of black bars may also be required as detailed in Appendix A.

Sample sizes, lengths and other information for dowel bars according to **ASTM** A1078 are detailed in Appendix C. At the discretion of the **Bureau**, sampling of black dowels may also be required as detailed in Appendix C.

If available to sample; sample sizes, lengths and other information for custom line (prefabricated) reinforcement bars according to **ASTM** A934 are detailed in Appendix E.

If available to sample; sample sizes, lengths and other information for **WWR** (including customized **WWR** used in the IL Class of PPC Beams) according to **ASTM** A884 are detailed in Appendix G.

6.3.4 Testing.

6.3.4.1 Straight Reinforcement Bars. The **Manufacturer** shall test the 30 **PRE Samples** according to the Test/Measurement schedule outlined in Table 1 for straight epoxy coated reinforcement bars.

Table 1. Testing and Conformance Requirements for Epoxy Coated Straight Reinforcement Bars

Sample #: *A number from the 1st to the 30th sample*
Bar #: *Standard bar size designation, e.g. #5, #8, etc.*
Heat #: *Manufacturer heat number the sample came from*
Sample Length: *Inches*

Test/Measurement	Conformance Requirement
Coating Thickness, (ASTM A775 Section 8.1), mils[1,2]	#3 to #5 Bars: 7 to 12 #6 to #18 Bars: 7 to 16
Bend Test, (ASTM A706 Section 10, Table 3; IDOT Std. Specs. 1006.10(a)(1) e.; ASTM A775 Section 8.3.2), Pass/Fail[3,4]	No Cracking or Disbonding of Coating on Outside Radius as Determined by the Inspector
Bend Test, (ASTM A775 Sections 8.3.1 and 8.3.2, Table 1), Pass/Fail[3,4]	No Cracking or Disbonding of Coating on Outside Radius as Determined by the Inspector

[1]6 ft sample lengths shall be used for coating thickness tests.
[2]A minimum of five recorded measurements shall be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as detailed in Appendix B.
[3]6 ft sample lengths shall be used for bend tests.
[4]The **Manufacturer** has the option of utilizing **ASTM** A775 pins or **ASTM** A706 pins for the bend test.

The **Inspector** will witness thickness and bend tests at the location of the **Manufacturer,** and will repeat the coating thickness measurements conducted by the **Manufacturer** as detailed in Appendix B.

If black bars are sampled, they shall be sent to the **Bureau**. Testing by the **Bureau** will be according to Section 6.3.4 of Policy Memorandum 26-08 “Reinforcement Bar And/Or Dowel Bar Plant Certification Procedure”.

6.3.4.2 Dowel 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.

Table 2. Testing and Conformance Requirements for Dowel Bars

Sample #: *A number from the 1st to the 30th sample*
Dowel Diameter: *Inches*
Heat #: *Manufacturer heat number the sample came from*
Sample Length: *Inches*

Test/Measurement	Conformance Requirement
Coating Thickness, (ASTM A1078 Section 8.1), mils[1]	8 to 16 mils

[1]A minimum of five recorded measurements shall be taken approximately evenly spaced along opposite sides of each dowel (10 measurements minimum) as detailed in Appendix D.

The **Inspector** will witness the thickness tests at the location of the **Manufacturer,** and will repeat the coating thickness measurements conducted by the **Manufacturer** as detailed in Appendix D.

If black dowels are sampled, they shall be sent to the **Bureau**. Testing by the **Bureau** will be according to Section 6.3.4 of Policy Memorandum 26-08 "Reinforcement Bar And/Or Dowel Bar Plant Certification Procedure".

6.3.4.3 Custom Line (Prefabricated) Reinforcement Bars. If sampled, the **Manufacturer** shall test its portion of the **PRE Samples** according to the Test/Measurement schedule outlined in Table 3 for custom line reinforcement bars.

Table 3. Testing and Conformance Requirements for Custom Line (Prefabricated) Reinforcement Bars

Sample #: *A number from the 1st to the 3rd sample*
Bar #: *Standard bar size designation, e.g. #5, #8, etc.*
Heat #: *Manufacturer heat number the sample came from*
Sample Length: *Inches*

Test/Measurement	Conformance Requirement
Coating Thickness, Straight Sections, (ASTM A934 Section 9.1), mils[1,3]	7 to 12
Coating Thickness, Bent Sections, (ASTM A934 Section 9.1), mils[2,3]	7 to 16
Bend Test, (ASTM A934 Sections 9.3.1 and 9.3.2), Pass/Fail[4]	No Cracking or Disbonding of Coating on Outside Radius as Determined by the Inspector

[1]6 ft sample lengths or lengths as determined by the **Inspector** shall be used for coating thickness tests. See also Appendix E.
[2]3 ft sample lengths or lengths as determined by the **Inspector** shall be used for coating thickness tests. See also Appendix E.
[3]A minimum of five recorded measurements shall be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as detailed in Appendix F.
[4]6 ft straight sample lengths or lengths as determined by the **Inspector** shall be used for bend tests. See also Appendix E.

The **Inspector** will witness thickness and bend tests at the location of the **Manufacturer,** and will repeat the coating thickness measurements conducted by the **Manufacturer** as detailed in Appendix F.

6.3.4.4 **WWR.** If sampled, the **Manufacturer** shall test its portion of the **PRE Samples** according to the Test/Measurement schedule outlined in Table 4 for **WWR** (including customized **WWR** used in the IL Class of PPC Beams).

Table 4. Testing and Conformance Requirements for **WWR**

Sample #: *A number from the 1st to the 5th sample*
Wire Size: *Standard wire size designation*
Heat #: *Manufacturer heat number the sample came from*
Sample Length: *Inches*

Test/Measurement	Conformance Requirement
Coating Thickness, Class A, (ASTM A884 Section 8.1.1), mils[1,2,3]	≥ 7
Coating Thickness, Class B, (ASTM A884 Section 8.1.2), mils[1,2,3]	≥ 18
Bend Test, (ASTM A884 Sections 8.3.1 and 8.3.2, Table 1), Pass/Fail[1]	No Cracking or Disbonding of Coating on Outside Radius as Determined by the Inspector

[1]Coating thickness and bend test samples shall be according to Appendix G.
[2]A minimum of five recorded measurements shall be taken along opposite sides of each wire (10 measurements minimum). Measurement locations and spacings are as shown in Appendix H.
[3]Class B implies plain and deformed wire intended for use in mechanically stabilized earth applications. All other applications shall be considered Class A.

The **Inspector** will witness thickness and bend tests at the location of the **Manufacturer,** and will repeat the coating thickness measurements conducted by the **Manufacturer** as detailed in Appendix H.

6.4 **Sample, Heat, and Laboratory Comparison Assessment Criteria.** Results from the tests outlined in Tables 1 through 4, 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** according the criteria outlined in Section 6.4.1.

Test results on the **PRE Samples** will be evaluated for conformance with Tables 1 through 4, as applicable, according to the criteria outlined in Section 6.4.2.

6.4.1 Laboratory Comparison Requirements.

6.4.1.1 Straight Reinforcement Bars

1. Individual **PRE Sample** Results. The test results for epoxy coating thickness for each of the 10 measurements (average of the set of three measurements per location) from each of the 30 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 1.5 mils

2. Bar Average **PRE Sample** Results. The average of the 10 measurements from each of the 3 **PRE Samples** for each of the 10 heats shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 0.5 mils

6.4.1.2 Dowel Bars

1. Individual **PRE Sample** Results. The test results for epoxy coating thickness for each of the 10 measurements (average of the set of three measurements per location) from each of the 30 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 1.5 mils

2. Dowel Average **PRE Sample** Results. The average of the 10 measurements from each of the 3 **PRE Samples** for each of the 10 heats shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 0.5 mils

6.4.1.3 Custom Line (Prefabricated) Reinforcement Bars

1. Individual **PRE Sample** Results. If sampled, the test results for epoxy coating thickness for each of the 10 measurements (average of the set of three measurements per location) from each of the 3 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 1.5 mils

2. Bar Average **PRE Sample** Results. If sampled, the average of the 10 measurements from each of the 3 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

Epoxy Coating Thickness 1.0 mils

6.4.1.4 **WWR**

1. Individual **PRE Sample** Results. If sampled, the test results for epoxy coating thickness for each of the 10 measurements (average of the set of three measurements per location) from each of the 3 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 2.5 mils

2. Wire Average **PRE Sample** Results. If sampled, the average of the 10 measurements from each of the 3 **PRE Samples** shall vary between laboratories (i.e., **Manufacturer** and **Bureau**) by not more than the following:

   Epoxy Coating Thickness 1.0 mils

6.4.1.5 Failure of the **Manufacturer** to meet to the requirements of Sections 6.4.1.1 through 6.4.1.4, as applicable, 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/or re-assessed according to Section 6.5.

6.4.2 **Specification** Conformance Requirements.

6.4.2.1 Conformance Requirements detailed in Tables 1 through 4, as applicable, shall apply to all tests conducted by the **Bureau**, as well as all tests conducted by the **Manufacturer**.

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

6.4.2.3 All of the **PRE Sample** test results shall meet the Conformance Requirements outlined in Tables 1 through 4, 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/or 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 or **PRE Samples** that do not conform to the requirements of Section 6.4.1.1 through 6.4.1.4, as applicable, may be sent to the **Bureau** and re-tested for epoxy coating thickness according to Section 6.3.4. Re-assessment will be according to Section 6.4.1.1 through 6.4.1.4, as applicable.

6.5.1.2 Heats that have been re-tested according to Section 6.5.1.1 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 or **PRE Samples** that do not conform to the bend test requirements of Section 6.4.2 may be re-sampled from the same heat and re-tested according to Section 6.3.4.

6.5.2.2 At the discretion of the **Bureau**, heats or **PRE Samples** that do not conform to the epoxy coating thickness requirements of Section 6.4.2 may be sent to the **Bureau** and re-tested according to Section 6.3.4.

6.5.2.2 Re-assessment of re-sampled and/or re-tested heats or **PRE Samples** 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 through 6.4.1.4.

6.5.3 Subsequent Re-Sampling, Re-Testing, and Re-Assessment Criteria. Heats and/or **PRE Samples** 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/or 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** is decertified by **CRSI**. 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**. These documents shall also be provided to the **Bureau** for epoxy coated straight reinforcement bars and dowel bars delivered to a jobsite.

7.2 **CRSI Certified Plant.** If a **Plant** is decertified by **CRSI**, 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 a **CRSI Certified Plant** 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 Straight Reinforcement Bars and Dowel Bars

7.4.1.1 The **District** shall select a minimum of two (2) reinforcement bar **PRO Samples** from each **Producer** on the **Qualified Producer List** that supplies reinforcement bars to projects within the **District** in a calendar year. If a **Producer** only supplies to one project in a calendar year, then only one (1) **Pro Sample** is required. See also Section 7.4.1.5. The total minimum number of **Pro Samples** for each calendar year shall be:

- 20 for **Districts** 2, 3, 4, 5, 6, 7 and 9
- 26 for **Districts** 1 and 8

7.4.1.2 **Process Control (PRO) Samples** shall be randomly selected from reinforcement bars on an IDOT or local agency jobsite, at a producing plant, at a material **Supplier**, or other location, as determined by the **District**. The **Pro Samples** shall be sent to the **Bureau** for testing.

7.4.1.3 The **PRO Samples** shall be taken from randomly selected heats, and from as many different reinforcement bar sizes as possible. A **PRO Sample** shall consist of two six-feet bars from the same heat, taken from two different bars in that heat. The **Pro Samples** shall include the full mill markings.

7.4.1.4 The **District** shall keep a count of the yearly **PRO Samples** taken from each **Qualified Plant**. It is the **District's** responsibility to obtain **PRO Samples** that are representative of the **Qualified Plants** suppling reinforcement bars to projects in the District..

7.4.1.5 The **Bureau** will keep a running total of the submitted **PRO Samples** from each **Qualified Plant** for each **District**. At the end of each calendar quarter, the **Bureau** will report to the **Districts** the number of **Pro Samples** submitted for the year. If a **District** is not on schedule to meet the minimum number of yearly **PRO Samples**, the **Bureau** will notify the **District** Materials **Engineer** and/or Physical Tests **Engineer**.

7.4.2 Custom Line (Prefabricated) Reinforcement Bars and **WWR**

7.4.2.1 For each project in which epoxy coated **WWR** is incorporated into the work, **Process Control (PRO) Samples** shall be taken by the **District** at the jobsite. For each project in which customized epoxy coated **WWR** is used in the IL Class of PPC Beams, **PRO Samples** shall be taken by the **District** at the prestressed **Plant**. **PRO Sampling** of epoxy coated custom line (prefabricated) reinforcement bars at the jobsite, fabricator, or any other location by a **District** will be as directed by the **Bureau.**

7.4.2.2 Sample sizes, lengths and other information for epoxy coated custom line (prefabricated) reinforcement bars shall be as detailed in Appendix E.

7.4.2.3 Sample sizes, lengths and other information for epoxy coated **WWR** (including **WWR** used in the IL Class of PPC Beams) shall be as detailed in Appendix G.

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 Tables 1 through 4, 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/or re-assessed according to Section 7.6.

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

7.6.1 Re-sampling of straight reinforcement bars and dowel bars shall be according to Sections 7.4.1.1 and 7.4.1.3 except that the re-sample shall not be from a randomly selected heat. The re-sample shall come from the same heat as the original test specimen. Re-sampling of custom line (prefabricated) reinforcement bars or **WWR** shall be according to 7.4.2.2 and 7.4.2.3, as applicable.

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 Tables 1 through 4, 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 epoxy coated reinforcement bars, dowels bars and/or **WWR** to **Departmental** projects.

7.7.2 **Probationary Plants** will not be immediately removed from the **Qualified Plant** List and may supply epoxy coated reinforcement bars, dowel bars, and/or **WWR** 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 I. 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 7.4.1.1 and 7.4.1.3, 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 PROCEDUE

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 Outline [Section 6.3.3 Straight (Unfabricated) Reinforcement Bars According to ASTM A775]

Heat #1		
Sample #	Mill Samples	Bend Re-Test Samples
1	2 @ 6 feet Long	2 @ 6 feet Long
2	1 @ 6 feet Long	NA
3	1 @ 6 feet Long	NA
Bend Test Sample from Sample #1 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #2		
Sample #	Mill Samples	Bend Re-Test Samples
4	2 @ 6 feet Long	2 @ 6 feet Long
5	1 @ 6 feet Long	NA
6	1 @ 6 feet Long	NA
Bend Test Sample from Sample #4 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #3		
Sample #	Mill Samples	Bend Re-Test Samples
7	2 @ 6 feet Long	2 @ 6 feet Long
8	1 @ 6 feet Long	NA
9	1 @ 6 feet Long	NA
Bend Test Sample from Sample #7 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #4		
Sample #	Mill Samples	Bend Re-Test Samples
10	2 @ 6 feet Long	2 @ 6 feet Long
11	1 @ 6 feet Long	NA
12	1 @ 6 feet Long	NA
Bend Test Sample from Sample #10 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #5		
Sample #	Mill Samples	Bend Re-Test Samples
13	2 @ 6 feet Long	2 @ 6 feet Long
14	1 @ 6 feet Long	NA
15	1 @ 6 feet Long	NA
Bend Test Sample from Sample #13 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #6		
Sample #	Mill Samples	Bend Re-Test Samples
16	2 @ 6 feet Long	2 @ 6 feet Long
17	1 @ 6 feet Long	NA
18	1 @ 6 feet Long	NA
Bend Test Sample from Sample #16 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Appendix A: Sampling Outline [Section 6.3.3 Straight (Unfabricated) Reinforcement Bars According to ASTM A775] (Cont.)

Heat #7		
Sample #	Mill Samples	Bend Re-Test Samples
19	2 @ 6 feet Long	2 @ 6 feet Long
20	1 @ 6 feet Long	NA
21	1 @ 6 feet Long	NA
Bend Test Sample from Sample #19 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #8		
Sample #	Mill Samples	Bend Re-Test Samples
22	2 @ 6 feet Long	2 @ 6 feet Long
23	1 @ 6 feet Long	NA
24	1 @ 6 feet Long	NA
Bend Test Sample from Sample #22 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #9		
Sample #	Mill Samples	Bend Re-Test Samples
25	2 @ 6 feet Long	2 @ 6 feet Long
26	1 @ 6 feet Long	NA
27	1 @ 6 feet Long	NA
Bend Test Sample from Sample #25 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Heat #10		
Sample #	Mill Samples	Bend Re-Test Samples
28	2 @ 6 feet Long	2 @ 6 feet Long
29	1 @ 6 feet Long	NA
30	1 @ 6 feet Long	NA
Bend Test Sample from Sample #28 Black bar sampling (if directed by the Bureau): 2 @ 6 feet Long		

Appendix B: Coating Thickness Measurement Procedure [Section 6.3.4.1 Straight (Unfabricated) Reinforcement Bars According to ASTM A775]

General:

1. Coating thickness measurements shall be according to SSPC-PA 2, following the instructions for calibration and use recommended by the thickness gage manufacturer.

2. A single recorded steel reinforcing bar coating thickness measurement is the average of three individual gage readings obtained between four consecutive deformations as shown in Figure B1.

Samples Collected at the Plant:

1. A minimum of five recorded measurements by the **Manufacturer** shall be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as shown in Figure B1.

2. The locations of the measurements conducted by the **Manufacturer** shall be clearly labeled/marked on the reinforcement bar as shown in Figure B1.

3. At the **Plant**, the **Inspector** will repeat the measurements conducted by the **Manufacturer** at the same locations measured by the **Manufacturer**.

Samples Collected in the Field:

1. A minimum of five recorded measurements by the **Bureau** will be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as shown in Figure B1.

2. The locations of the measurements conducted by the **Bureau** will be clearly labeled/marked on the reinforcement bar as shown in Figure B1.

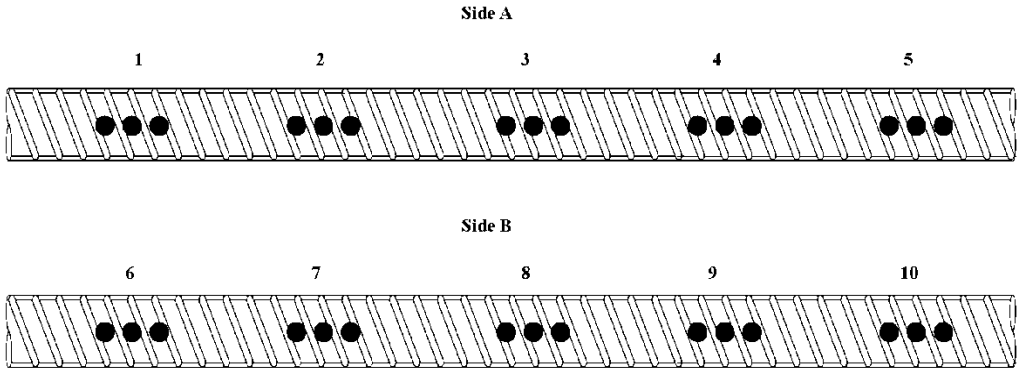


Figure B1

Appendix C: Sampling Outline [Section 6.3.3 Dowel Bars According to ASTM A1078]

Heat #1	
Sample #	Mill Samples
1	1 @ 6 feet Long
2	1 @ 6 feet Long
3	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #2	
Sample #	Mill Samples
4	1 @ 6 feet Long
5	1 @ 6 feet Long
6	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #3	
Sample #	Mill Samples
7	1 @ 6 feet Long
8	1 @ 6 feet Long
9	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #4	
Sample #	Mill Samples
10	1 @ 6 feet Long
11	1 @ 6 feet Long
12	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #5	
Sample #	Mill Samples
13	1 @ 6 feet Long
14	1 @ 6 feet Long
15	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #6	
Sample #	Mill Samples
16	1 @ 6 feet Long
17	1 @ 6 feet Long
18	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #7	
Sample #	Mill Samples
19	1 @ 6 feet Long
20	1 @ 6 feet Long
21	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Appendix C: Sampling Outline [Section 6.3.3 Dowel Bars According to ASTM A1078] (Cont.)

Heat #8	
Sample #	Mill Samples
22	1 @ 6 feet Long
23	1 @ 6 feet Long
24	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #9	
Sample #	Mill Samples
25	1 @ 6 feet Long
26	1 @ 6 feet Long
27	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Heat #10	
Sample #	Mill Samples
28	1 @ 6 feet Long
29	1 @ 6 feet Long
30	1 @ 6 feet Long
Black dowel sampling (if directed by the Bureau): 1 @ 6 feet Long	

Appendix D: Coating Thickness Measurement Procedure [Section 6.3.4.2 Dowel Bars According to ASTM A1078]

General:

1. Coating thickness measurements shall be according to SSPC-PA 2, following the instructions for calibration and use recommended by the thickness gage manufacturer.

2. A single recorded dowel bar coating thickness measurement is the average of three individual gage readings obtained within a distance of ± ½ in. as shown in Figure D1.

Samples Collected at the Plant:

1. A minimum of five recorded measurements by the **Manufacturer** shall be taken approximately evenly spaced along opposite sides of each dowel (10 measurements minimum) as shown in Figure D1.

2. The locations of the measurements conducted by the **Manufacturer** shall be clearly labeled/marked on the dowel as shown in Figure D1.

3. At the **Plant**, the **Inspector** will repeat the measurements conducted by the **Manufacturer** at the same locations measured by the **Manufacturer**.

Samples Collected in the Field:

1. A minimum of five recorded measurements by the **Bureau** will be taken approximately evenly spaced along opposite sides of each dowel (10 measurements minimum) as shown in Figure D1.

2. The locations of the measurements conducted by the **Bureau** will be clearly labeled/marked on the reinforcement bar as shown in Figure D1.

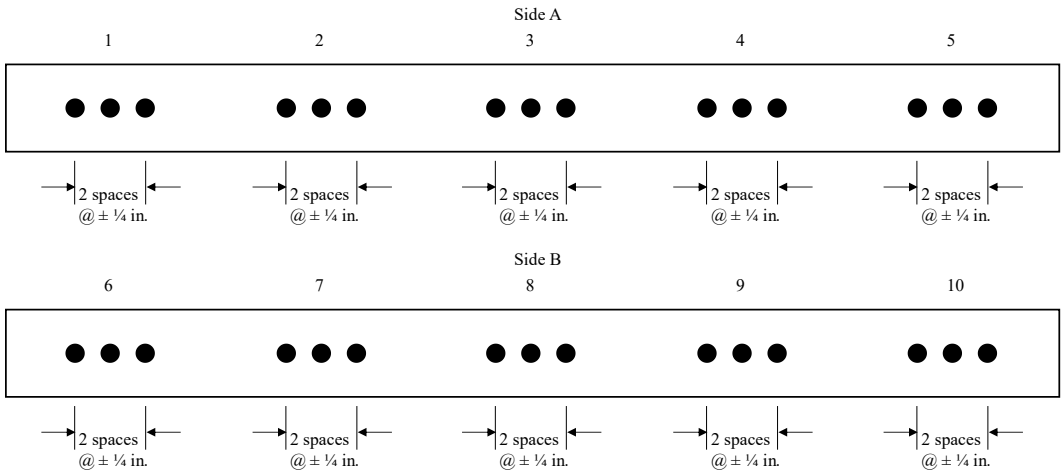


Figure D1

Appendix E: Sampling Outline [Section 6.3.3 Custom Line (Prefabricated) Reinforcement Bars According to ASTM A934]

Sample #	Mill or Field Samples	Bend Mill or Field Re-Test Samples
1	2 Straight @ 6 feet Long	2 Straight @ 6 feet Long
2	1 Curved @ 3 feet Long	NA
3	1 Curved @ 3 feet Long	NA
Bend Test Sample from Sample #1 If sample lengths are not possible, sampling shall be as directed by the Inspector		

Appendix F: Coating Thickness Measurement Procedure [Section 6.3.4.3 Custom Line (Prefabricated) Reinforcement Bars According to ASTM A934]

General:

1. Coating thickness measurements shall be according to SSPC-PA 2, following the instructions for calibration and use recommended by the thickness gage manufacturer.

2. A single recorded steel reinforcing bar coating thickness measurement is the average of three individual gage readings obtained between four consecutive deformations as shown in Figures F1 (Straight Sections) and F2 (Bent Sections).

Samples Collected at the Plant:

1. A minimum of five recorded measurements by the **Manufacturer** shall be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as shown in Figures F1 (Straight Sections) and F2 (Bent Sections).

2. The locations of the measurements conducted by the **Manufacturer** shall be clearly labeled/marked on the bar as shown in Figures F1 (Straight Sections) and F2 (Bent Sections).

3. At the **Plant**, the **Inspector** will repeat the measurements conducted by the **Manufacturer** at the same locations measured by the **Manufacturer**.

Samples Collected in the Field:

1. A minimum of five recorded measurements by the **Bureau** will be taken approximately evenly spaced along opposite sides of each bar (10 measurements minimum) as shown in Figures F1 (Straight Sections) and F2 (Bent Sections).

2. The locations of the measurements conducted by the **Bureau** will be clearly labeled/marked on the reinforcement bar as shown in Figures F1 (Straight Sections) and F2 (Bent Sections).

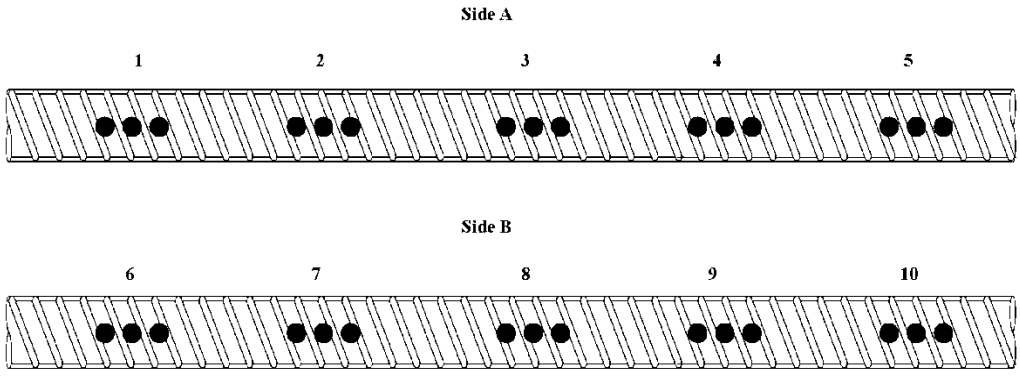


Figure F1

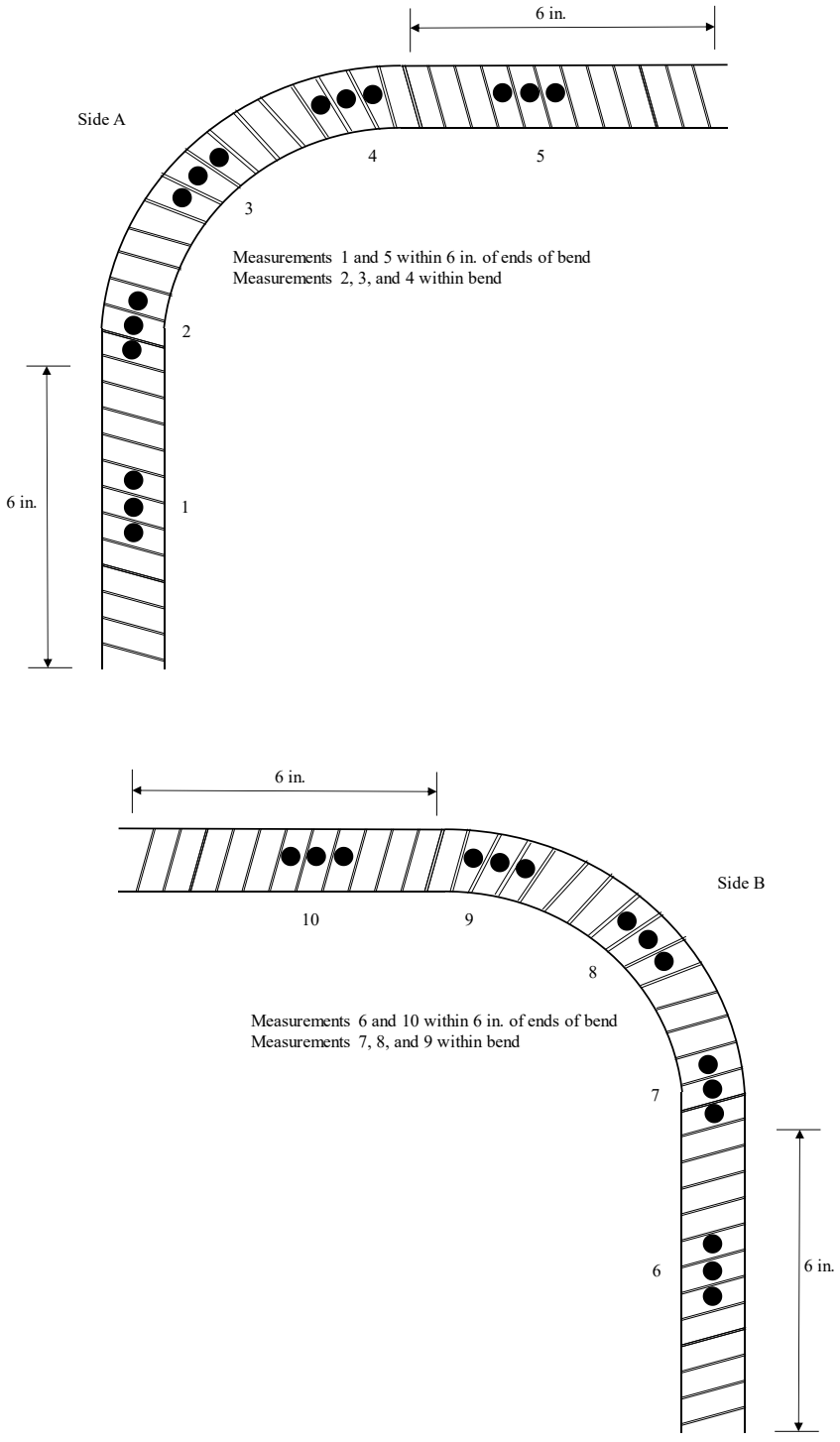

6 in.
Side A
4
5
3
Measurements 1 and 5 within 6 in. of ends of bend
Measurements 2, 3, and 4 within bend
2
6 in.
1
6 in.
Side B
10
9
8
Measurements 6 and 10 within 6 in. of ends of bend
Measurements 7, 8, and 9 within bend
7
6
6 in.

Figure F2

Appendix G: Sampling Outline [Section 6.3.3 Welded Wire Reinforcement According to ASTM A884]

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

1 Sample: 3 feet x 3 feet (See also Figure G1)

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

1 Sample: 4 feet x 4 feet (See also Figure G1)

Mesh for IL Class of PPC Beams[1]

1 Sample: M5, M6, M7, or M8 Mesh 3 to 4 feet wide (See also Figure G2)

[1]If sampling according to Figure G1 or G2 is not possible, sampling shall be a directed by the Inspector

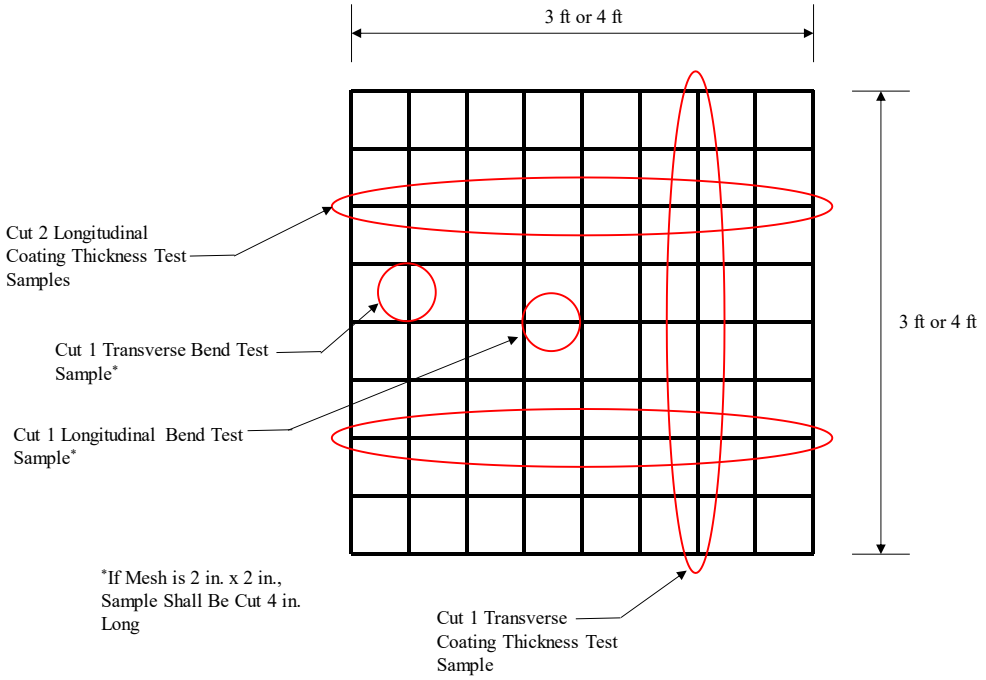


Figure G1 - Thickness and Bend Test Sample Cutting Diagram (Standard WWR Mesh)

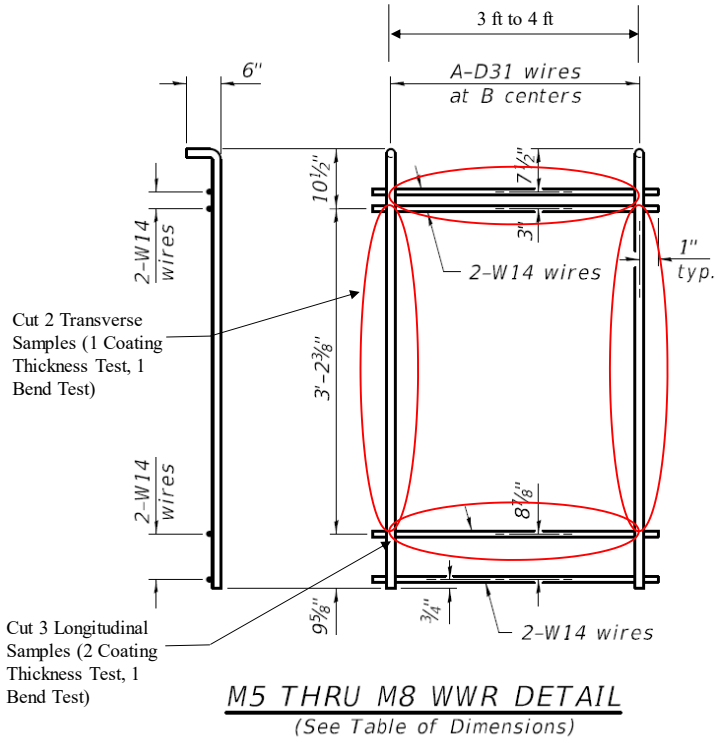


Figure G2 - Thickness and Bend Test Sample Cutting Diagram (Custom WWR Mesh for IL Class of PPC Beams – 54 in. Deep Beam Shown)

Appendix H: Coating Thickness Measurement Procedure [Section 6.3.4.4 WWR According to ASTM A884]

General:

1. Coating thickness measurements shall be according to SSPC-PA 2, following the instructions for calibration and use recommended by the thickness gage manufacturer.

2. A single recorded steel wire coating thickness measurement is the average of three individual gage readings obtained within a distance of ± ½ in. as shown in Figures H1 (Mesh ≥ 4 in.) and H2 (Mesh < 4.in).

Samples Collected at the Plant:

1. A minimum of five recorded measurements by the **Manufacturer** shall be taken along opposite sides of each wire (10 measurements minimum). Measurement locations and spacings are as shown in Figures H1 (Mesh ≥ 4 in.) and H2 (Mesh < 4.in). Measurement locations and spacings as shown in Figure D1 may be more appropriate for some samples taken from Custom Meshes for the IL Class of PPC Beams.

2. The locations of the measurements conducted by the **Manufacturer** shall be clearly labeled/marked on the wire as shown in Figures H1 (Mesh ≥ 4 in.) and H2 (Mesh < 4.in).

3. At the **Plant**, the **Inspector** will repeat the measurements conducted by the **Manufacturer** at the same locations measured by the **Manufacturer**.

Samples Collected in the Field:

1. A minimum of five recorded measurements by the **Bureau** will be taken along opposite sides of each wire (10 measurements minimum). Measurement locations and spacings are as shown in Figures H1 (Mesh ≥ 4 in.) and H2 (Mesh < 4.in). Measurement locations and spacings as shown in Figure D1 may be more appropriate for some samples taken from Custom Meshes for the IL Class of PPC Beams.

2. The locations of the measurements conducted by the **Bureau** will be clearly labeled/marked on the reinforcement bar as shown in Figures H1 (Mesh ≥ 4 in.) and H2 (Mesh < 4.in).

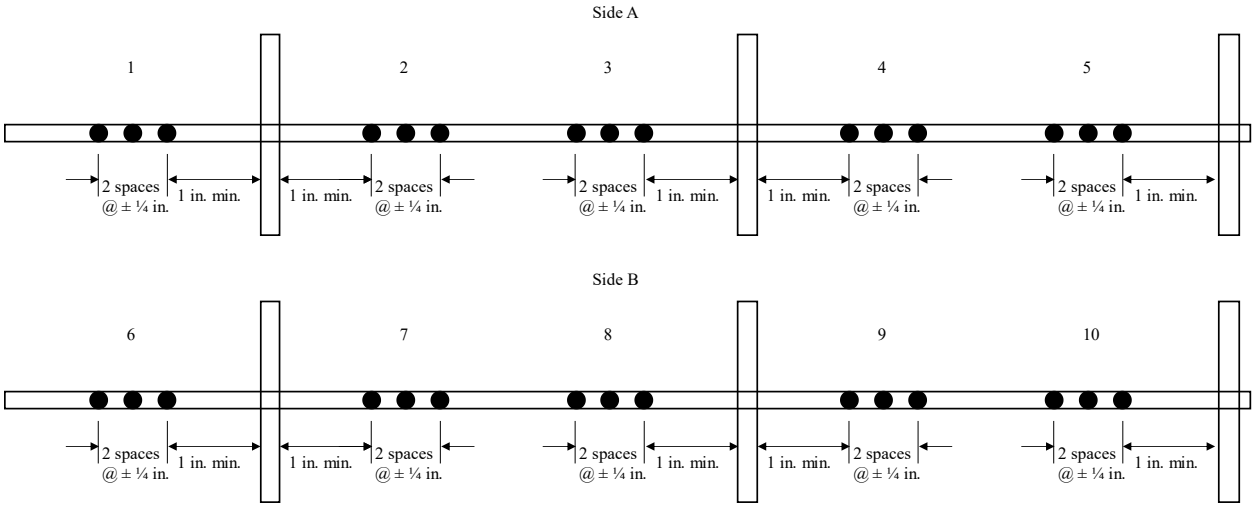


Figure H1 - Mesh Sizes 4 in. x 4 in. and Larger

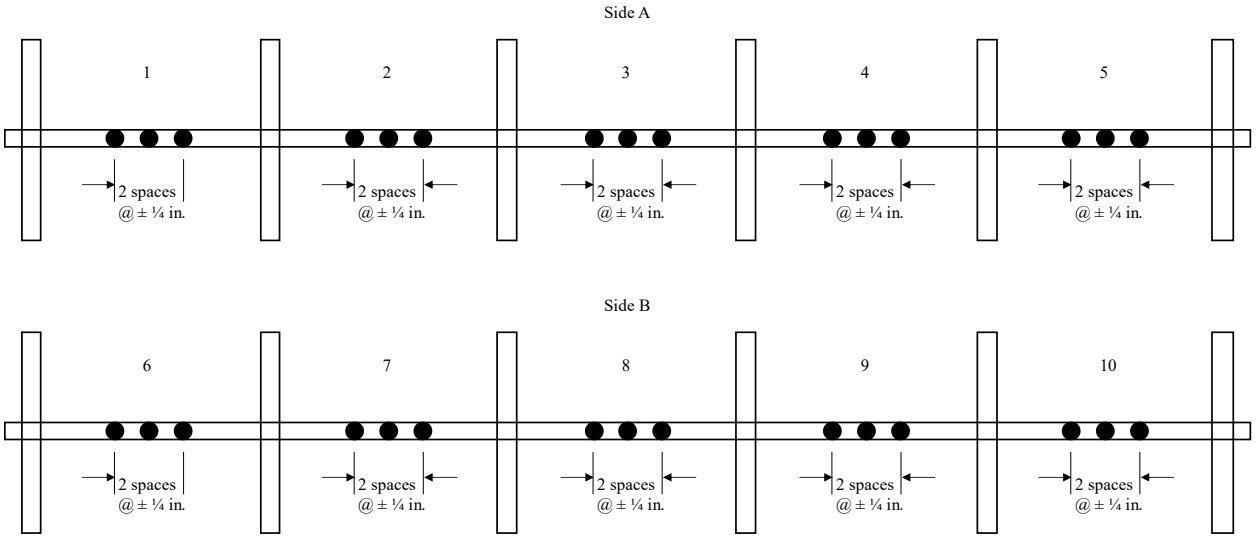


Figure H2 - Mesh Sizes Smaller Than 4 in. x 4 in.

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.Aldridge@Illinois.gov) within 15 business days of notification of Disqualification, Probation, or Denial of Qualification.

Plant and Location:	**Date of Transmittal:**

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):

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