



Materials sampling and testing methods and documentation procedures prescribed in chapter 8 of the CMM are mobilized into the contract by [standard spec 106.3.4.1](#) and [standard spec 106.3.4.3.1](#).

8-75.1 Plant Certification Program for Fabrication of Prestressed Concrete Members

8-75.1.1 Introduction

Prestressed concrete members must be fabricated at plants certified by the department in order to be used on department projects. The purpose of this document is to outline the processes to obtain and maintain plant certification with the department. Generally, the fabricator must provide a quality control (QC) program for plant manufacturing. QC is all operations that control the product manufacturing process within the specification requirements. The fabricator is responsible for all QC functions for materials and fabrication identified in the specification and this plant certification procedure. Quality verification (QV) oversight (verification of the QC processes) will be provided by the department or its agent.

Acceptance of prestressed concrete member items is contingent on the items being manufactured at plants complying with both this plant certification program and [standard spec 503](#).

To provide prestressed concrete members to WisDOT projects, plants must:

- Be certified by the Precast/Prestressed Concrete Institute's (PCI) certification program for the type(s) of prestressed members to be produced.
- Have a PCI certified Level II inspector responsible for QC sampling, testing, and inspection.
- Be approved by the department as a certified prestressed concrete member fabrication plant before start of production for WisDOT projects.
- Be in compliance with the additional requirements of this procedure (refer to SCOPE and Appendix A).

Plants, at a minimum, must undergo an annual operation review and approval process. Certification will be granted/renewed or denied subsequent to the review.

WisDOT projects include state, county, and municipal federal aid and authorized county and municipal state aid projects. Fabricators whose plants are not on the approved list to provide prestressed concrete members to WisDOT projects will be given a period of one year to establish certification according to this program. This period will start with their first notification to the department of their intent to provide products for WisDOT projects.

8-75.1.2 Scope

Throughout this document there are two distinctive inspection issues of plant certification that will be addressed:

1. Materials incorporated into the products
2. Fabrication of the products

8-75.1.2.1 Fabrication Items

The items included under this plant certification program are as described in [standard spec 503](#):

- Prestressed concrete girders
- Other prestressed concrete members

The item requirements must be according to the plans and specifications and contract. Prestressing of concrete members must be by the pretensioning method consisting of the following steps:

- Initial stressing of reinforcing tendons
- Placement of reinforcing steel, hardware and forms
- Production, placement, and curing of concrete
- Releasing stress from anchorages to the concrete after development of specified concrete strength
- Repairs, storage, and shipment

8-75.1.2.2 Department Plant Certification

The department's plant certification requirements are as follows (refer to Appendix A of this program for expanded information):

1. Prequalification by PCI plant certification as a fabricator in good standing.
2. A PCI certified Level II inspector responsible for QC.
3. A current quality control plan, based on PCI guidelines, and approved by the department.
4. WisDOT's annual plant review by the department's certification review team (refer to the "Authority for Plant Certification" section of this procedure) and approval process including QC/QV inspection requirements of this procedure and maintaining records identified in Appendix B and Appendix C.

8-75.1.3 General

Fabrication plants must provide facilities and qualified personnel to perform the specified tests (refer to Appendix B, "Schedule of Tests") and maintain an acceptable quality control program. The plant must have a PCI Level II certified QC inspector either on the plant staff or from a consultant employed by the plant owner. This inspector must report to personnel other than those responsible for production. The Level II QC inspector must be on duty at all times when the plant is in production of products for WisDOT projects. When differences exist between the PCI plant certification program aspects and [standard spec 503](#), standard spec 503 will prevail.

All materials intended for use in the fabrication of prestressed concrete members must be tested according to the "Schedule of Tests" contained in Appendix B of this procedure. The fabricator must maintain records of all product ingredient test reports, certifications, and quality control testing done in the production of prestressed concrete members. These records must be available at all times for examination by the department QV inspector and must be retained for a minimum period of five years after the item has been accepted by the department.

Continued certification of a fabrication plant is contingent upon satisfactory completion of an initial plant operation review by the department and, then, sustained by a minimum of one annual review thereafter.

The fabricator must be required to perform quality control inspections. The department intends only to perform quality verification inspections. By its QV inspection, the department intends only to facilitate the work and review the quality of work. This QV inspection does not relieve the fabricator of any responsibility for identifying and replacing defective material and workmanship.

The department QV inspector must be PCI Level II certified. The QV inspector(s) will observe the fabrication process and materials, review required testing and other records on file, and make a visual inspection of the quality of workmanship of completed products for conformance with specifications and freedom from defects. Before the start of production of girders or other prestressed concrete members for WisDOT projects, the fabricator must notify the department QV inspector of the plant production schedule. The fabricator must give the QV inspector safe and free access to the work. If the QV inspector observes any work not meeting specifications or unacceptable quality control practices, the QV inspector will advise the plant manager. If the corrective action is not acceptable to the QV inspector, the girder(s) or other member(s) will be rejected by the department.

8-75.1.4 Plant Certification Qualification

Plants requesting approval to fabricate prestressed concrete members for use on WisDOT projects must provide the following prequalification documentation and information with their application:

1. PCI plant certification as a fabricator in good standing. A copy of the plant's PCI certification must be submitted to the department when application for certification is made. The plant's two most recent audit reports by PCI must be available at all times for review by the department and the department's certification review team. The reports must be reviewed only in the presence of plant personnel. The contents of the audit reports must remain confidential between the plant and the department and no parts of the report must be reproduced or removed from the plant premises.
2. A current quality-control plan based on PCI guidelines, including fabricator documentation of all girders and other prestressed concrete member items.
3. Apply in writing to the director of the WisDOT Bureau of Technical Services (Attention: quality management engineer). The request for plant certified status must include information on the plant QC program (i.e. product control operations, testing capabilities, facilities information, programs/tracking mechanisms such as inspection, and testing and personnel to maintain quality including identification of the PCI Level II certified inspector and a copy of the certification, records keeping information, etc.). The QC program must ensure that all fabrication, materials, and processes, consistently comply with applicable specification requirements (refer to Appendix B, Schedule of Tests).^[1]

^[1] Example QC plans will be furnished by the department upon request.

4. Undergo an on-site plant review by the department's certification review team who will observe fabricating processes, review records on file, and make visual inspections of the quality of workmanship of completed products for conformance with specifications and freedom from defects. The certification review team must have safe and free access to the plant at any time.

The certification review team will insure that the fabricator has facilities and equipment necessary to perform all operations to produce acceptable quality prestressed concrete products complying with all applicable specification requirements. The fabricator must be capable of consistently supplying acceptable products in quantity sufficient to avoid delays during construction. Any proposed modifications in plant methods, QC program, certified QC inspection personnel, or changes in sources of materials must be reported promptly to the region designated contact person where the plant is located. Department records of plant reviews previously made will be used to evaluate those fabricators currently supplying products to WisDOT. Plant reviews will be made a minimum of once per year.

Fabricators will be notified of their certification status subsequent to the plant review process. The department will maintain a list of certified plants on its electronic materials test system (MTS).

8-75.1.5 Maintenance of Plant Certified Status

Fabricators must request plant re-approval annually. The request must be in writing and include any changes that have occurred in the fabricator's plant methods, QC program, and certified QC inspection personnel since the last approval. The request must be received by the Bureau of Technical Services within one year of the previous approval; otherwise the approval status will be terminated. Upon receipt of the request for re-approval, the department will initiate a plant inspection review by the certification review team, at a time when the plant is in production of products for WisDOT projects, according to this program.

Plants on the department's approved list will be subject to reviews (complete or partial) at any time by the department's certification review team and QV inspector(s). Plant reviews will follow the guidelines of this program.

8-75.1.6 Loss of Plant Certified Status

Plant certification may be withdrawn for the following conditions:

- Loss of PCI plant certification.
- Inability to consistently fabricate products meeting specification requirements.
- Lack of maintenance of required records and improper documentation.
- Failure to maintain an approved quality control program.
- Failure to satisfactorily resolve deficiencies identified by certification reviews.

Removal of a plant from the certified list will be by the Director of the Bureau of Technical Services. Notification of removal from the list will be in writing.

8-75.1.7 Plant Recertification Qualification

A plant that has lost certification must comply with the following to be recertified:

- Items 1 through 4 of "Plant Certification Qualification" section of this procedure.
- Submit documentation to the director of the Bureau of Technical Services identifying the reason(s) decertification occurred and the corrective actions taken by the fabricator.

During the time a plant is not on the approved list, due to loss of certification, prestressed concrete members fabricated at the plant will only be accepted when the plant is under an increased level of QV inspection as determined by the department. The department's increased costs for QV inspection will be paid by the fabrication plant or their agent, unless other arrangements are agreed upon by the department.

Under this program, a fabrication plant will have a fabrication period of 3 months to regain certified status. If, after three months, the plant has not met all requirements for recertification, prestressed concrete members that are fabricated in the plant will not be accepted for use on WisDOT projects until the plant is recertified to furnish these products under this procedure (the department's plant certification program). Notification of this department action will be sent to all WisDOT regions by the Bureau of Technical Services. Decisions regarding future qualification for certification of a plant so affected will be by the Director of the Bureau of Technical Services.

8-75.1.8 Authority for Plant Certification

The director of the Bureau of Technical Services will determine the plants to be certified based on recommendations of the department's certification review team. Notification of plant certification will be made in writing to the fabricator.

The certification review team will consist of representatives from WisDOT Central Office, WisDOT regions, and any others included by the department. FHWA may assist with the review upon request by the department.

8-75.1.9 Department Verification and Plant Certification Stamp

Each prestressed concrete member fabricated under this plant certification program requires, for acceptance of

items upon delivery to projects, a shipping document stamped with the following plant certification and a satisfactory visual inspection by the engineer at the job site.^[2]

CERTIFIED TO MEET WISDOT SPECIFICATIONS

(Name of Manufacturing Company)

^[2] The stamp serves as the fabricator's certification that the item has been fabricated in compliance with all specifications and the fabricator has all the pertinent documentation available for examination by the appropriate department personnel.

Furthermore, acceptance is contingent upon receipt and evaluation, by the department, of the cylinder test results as provided by the fabricator.

8-75.1.10 Certification of Plants Not on the Approved List

Prestressed concrete members fabricated in plants not on the WisDOT approved list may be accepted when the plant is under increased QV inspection by the department for an interim period not to exceed one year. After that time, the plant must have attained certification under the department's plant certification program or products will not be accepted for use on WisDOT projects. The department's increased costs for QV inspection will be paid for by the fabrication plant or their agent, unless other arrangements are agreed upon by the department.

8-75.1.11 Department Contact Person

Inquiries and comments regarding this plant certification procedure may be addressed to:

Quality Assurance Supervisor
Wisconsin Department of Transportation
Truax Center
3502 Kinsman Boulevard
Madison, Wisconsin 3704
Tel.: (608) 246-7939

8-75.2 Certification Method of Acceptance for Bridge Metal Secondary Fabrication Items

8-75.2.1 Introduction

Acceptance of Bridge Metal Secondary Fabrication items by the Certification Method provides for acceptance of these materials for use on WisDOT projects upon the fabricator's certification that the product as furnished to the contractor (or other purchaser) complies with the pertinent specification and contract requirements. Fabrication must comply in all respects with the American Welding Society (AWS) specifications, with standard spec part 5 and 6, and with workmanship and material quality requirements of [standard spec 105](#) and [standard spec 106](#). Fabrication plants are subject to periodic inspections by the department and all products will be inspected at the job site by the engineer before use.

WisDOT Projects include: State, county and municipal Federal Aid and authorized County and Municipal State Aid projects in addition to materials purchased directly by the state. In order to provide Secondary Fabrication items to WisDOT projects a fabricator must comply with the following procedures and requirements under the Certification Method. New fabricators must be given one year from the beginning of their first WisDOT fabrication project to establish their certification in accordance with this method.

8-75.2.2 Scope

The items included under secondary fabrication are the following:

Table 1 Secondary Fabrication Items

Rail posts	Expansion devices
Anchor assemblies for rail posts	Curb and sidewalk cover plates
Sleeves	Floor drains
Shims	Guardrail anchors
Rail panels	Sheet lead
Anchor bolts	Elastomeric pads
Protection angles	Bearing assemblies (steel)
Structural fasteners	Structural steel diaphragms

Fabrications of the above items will be inspected by the department and reported individually until a fabricator achieves certification by this method.

8-75.2.3 General

The fabricator must provide facilities and qualified personnel to maintain an acceptable quality control program. The fabricator must maintain records of mill test reports and certifications of metal. These test records must be available at all times for examination by the department inspector and for a period of 5 years after use on a project.

Acceptance of items by this process will also be contingent upon continued satisfactory verification inspection at the project site by project personnel and by satisfactory service.

8-75.2.4 Fabricator Qualification for Approved List

Fabricators requesting approval to supply products under the Certification Method of Acceptance must provide the following:

1. Apply in writing to the director, Bureau of Structures (Attention: bridge shop fabrication supervisor). This request for certified status must include information on the fabricator's established quality control program (i.e. product control operations, frequencies of testing, tests conducted, facilities, programs and personnel to maintain quality, and shipping records, etc.). The program ensures that all materials used to fabricate products comply with applicable specifications and fabricated products consistently meet specifications.
2. Undergo an on-site plant inspection by a department inspector(s) to observe fabricating processes, review records on file and make visual inspections of the quality of workmanship of completed products for conformance with specifications and freedom from defects. Plant access by the inspector(s) is necessary to ensure compliance.

The inspection will ensure the fabricator has facilities and equipment necessary to perform all operations to produce acceptable quality secondary fabrication items complying with all applicable specification requirements. The fabricator must be capable of consistently supplying acceptable products in quantity sufficient to avoid delays during construction. Any proposed modifications in methods of or change in source of materials must be reported to the department inspector promptly.

Department records of inspection will be used for fabricators previously supplying products to WisDOT.

Fabricators will be approved by the director, Bureau of Structures. The department will notify all region construction and materials sections when fabricators are approved and maintain a list of approved fabrication plants on the department electronic system.^[3]

^[3] DOTNET, Transportation Systems Development, Technical Services, Quality Management, Approved Lists, Approved List for Year, Approved Fabricators, Bridge Metal Secondary Items, (page 3).

8-75.2.5 Fabricator Maintenance of Approved Status

Fabricators must request to be re-approved annually. The request must be in writing and include any changes in the fabricator's quality control program. The request must be received at the Bureau of Structures within one year of the previous approval or the approval status will be terminated. Upon receipt of request for re-approval the department will initiate a fabrication plant inspection as outlined in the Fabricator Qualification for Approved List section of this procedure.

Fabrication plants on the approved list will be inspected by the department on a regular basis.

Fabricators will be subject to certification of material audits and shop plan reviews during inspections.

8-75.2.6 Fabricator Qualification for Re-approval

A fabricator who has lost approved status and seeks to be re-approved, must perform these actions.

- Fulfill all parts of the Fabricator Qualification for Approved List section of this procedure.
- Submit documentation to the Director of the Bureau of Structures identifying the reasons decertification occurred and the corrective actions taken to resolve the problems.

During the time a fabricator is not on the approved list secondary fabrication items from the plant will be accepted only by department inspection and reporting of each item individually. The department's increased costs for inspection and reporting of items individually will be paid for by the fabrication shop or their agent, unless other arrangements are agreed upon by the department.

Under this method, a fabrication plant will have a fabrication period of 3 months to regain approval status. If, after three months, the fabricator has not fulfilled all requirements for re-approval, the secondary fabrication items listed in Table 1 that are fabricated in the plant will not be accepted for use on WisDOT projects until the fabricator becomes re-approved to furnish these products under the department's Certification Method. The notification will be sent to all WisDOT regions. Decisions regarding future qualification for approval of an affected plant will be by the director of the Bureau of Structures. Approval to provide secondary fabrication products under acceptance by certification may be withdrawn for the following conditions:

- Inability of a fabricator to consistently supply products meeting specification requirements. This is defined as three rejections of secondary fabrication items, by the department inspector(s), in a three-month period.
- Lack of maintenance of required records.
- Improper documentation of shipments.
- Not maintaining an acceptable quality control program.

The decision to remove a fabricator from the approved list will be made by the Bureau of Structures. Notification of removal from the list will be in writing.

8-75.3 Fabricator Certification of Shipments and Documentation

Each shipment of secondary fabrication products must include a certification statement from a fabrication plant providing a loading document (or shipping invoice), date, project information, and contractor identification that lists the products in the shipment by description and number. The certification statement must be on the fabricating company's letterhead, with signature and title of a person responsible for certifying the product to bind the fabricator, and be worded essentially as follows:

"The products covered by this fabrication statement were manufactured in compliance with (list pertinent specifications) and comply with the "Buy America Provisions" of WisDOT contracts. Copies of certified mill test reports are on file and available for review at the plant from which the products were fabricated. Representative samples of finished products have been inspected for conformance with the requirements of (list pertinent specifications)."

These documents must be submitted to the engineer at the time of delivery of products to a project. The documents will be retained with the project records.

[Standard spec 506.2.12](#) discusses these items.

8-75.3.1 Department Verification by Job Site Inspection

The engineer will conduct a visual inspection at the job site when delivery of products is made. The engineer may accept secondary fabrication products at the job site for shipments that include a loading document, fabricator certification statement and a satisfactory visual inspection.

8-75.3.2 Acceptance of Products From Plants Not on the Approved List

Secondary fabrication products from plants not covered on the WisDOT approved list may be accepted by department inspection and reporting of each individual item for a period not to exceed one year. After that time, the secondary fabrication items listed in Table 1 will not be accepted for use on WisDOT projects unless the fabricator is approved to furnish these products under the department's certification method. The department's increased costs for inspection and reporting of items individually will be paid for by the fabrication shop or their agent, unless other arrangements are agreed upon by the department. These products will be subject to the visual job site inspection outlined in the Department Verification and Plant Certification Stamp section of this procedure before acceptance and incorporation into WisDOT projects.

8-75.3.3 Pile Driving Data, Form DT1924

Provide a driving log for the first piling at each unit of structure using department form [DT1924](#). The driving log and associated data is required for informational and comparative purposes only. Record the following

information

- All applicable data including type, length, size, location of the pile tested and description of the hammer.
- The "Fall H" column the height of fall (stroke) of ram or striking parts of the hammer for each foot of penetration of the pile.
- The "Penetration Resistance" column the number of blows of the hammer for each foot of penetration of the pile and/or the set (inches per 10 blows).
- The "Bearing" column the corresponding Nominal resistance values of the pile as computed in tons for each foot of penetration of the pile.
- Any unusual conditions encountered in driving the pile should be noted on the back of the report.

The log is a valuable tool for assessing reasonableness of piling requirements shown on the plan. If the driving record for the first pile deviates significantly from that which was anticipated, the project manager should promptly discuss findings with the region PDS supervisor.

An example of a completed report is shown in [Figure 1](#). You should be aware the form provides, on the reverse side, a record for piling depths of 160 feet. The reverse side is not shown in this manual for the sake of brevity.

Electronic copies (PDFs) of forms [DT1924](#) and [DT1315](#) are to be submitted, with Project Manager concurrence, for all structures to the Bureau of Structures by email at:

DOTDTSDStructuresPiling@dot.wi.gov

and to the Bureau of Technical Services, Geotechnical Unit at:

DOTDTSDGeotechnicalPiling@dot.wi.gov

Include the structure number (B, C, S, or etc.) in the subject field of the email.

Figure 1 Pile Driving Data, Form DT1924

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*Note any falling off in rated speed and height of fall during driving This driving record shall be kept for all test piling. It shall be kept for the first service piling in each pier or abutment when there is no test piling item. Show any delays to the driving operation. Show all auguring through fills. Show all jetting. The driving record may be continued on the back of this report along with any remarks, or on additional sheets.																																																																																																																																																																																																																																															
Submit an electronic copy to the Bureau of Structures at: DOTDOTS@structures.dln.wa.gov and to the Bureau of Technical Services, Geotechnical Unit at: DOTDOTSD@geotechnical.dln.wa.gov Also submit a copy to the Regional Office.																																																																																																																																																																																																																																															

8-75.3.4 Piling Record, Form DT1315

Department form DT1315 "Piling Record" provides a summary record of all piling driven, except for test piling. Test piling data is to be reported on form DT1924.

The inspector will complete a separate form DT1315 for each unit of a structure containing piling. A sketch is to be made of the unit, with the location of each pile noted on the sketch. When a test pile is left in place to become a bearing pile, the location should be noted on the sketch with an "X" and the words "Test Pile."

The form DT1315 is an excel spreadsheet with three identical workbooks. If the number of piling within the substructure exceeds 16 piles, then the additional workbook(s) will also be completed. The cell formulas for the average nominal resistance, the total driven pay length and the average driven pay length will need to be revised by the submitter to include all the appropriate column information in the additional workbooks.

The set (inches per 10 blows) and stroke (feet) at the end of driving operations should be recorded for each pile. These values are required to calculate the Nominal Resistance (Bearing Value) of the piles.

Electronic copies (PDFs) of forms DT1924 and DT1315 are to be submitted for all structures to the Bureau of

Structures by email at DOTDTSDDStructuresPiling@dot.wi.gov and to the Bureau of Technical Services, Geotechnical Unit at DOTDTSDDGeotechnicalPiling@dot.wi.gov. Include the structure number (B, C, S, or etc.) in the subject field of the email. A copy is to be retained in the region project files.

An example of a completed report is shown in [Figure 2](#)

Figure 2 Piling Record, Form DT1315

PILING RECORD		Wisconsin Department of Transportation						
DT1315 4/2013 (Replaces EB569)								
County Rock	Highway Number STH 26	Bridge Number B-53-259						
Project Number 1390-04-79	Bridge Contractor Zenith Tech Inc.							
Pile Type CIP Concrete 12 3/4 x .375-inch	Plan Length 20 FT	Design Bearing Value 206 Tons						
Type of Driver – Type and Size of Hammer D-19-42, RAM = 4.00 kips								
Plan of Unit: 								
Pile Number	Set (inches per 10 blows)	Stroke (feet)	Nominal Resistance (tons)	Delivered Length (feet)	Splice Length (feet)	Cutoff Length (feet)	Driven (pay) Length (feet)	Date Installed (m/d/yyyy)
1	1.875	9.5	245.1	20.1	62.4	6.9	75.6	14-Nov
2	1.75	8.5	234.0	20.1	61.8	2.5	79.4	13-Nov
3	1.875	8	220.8	20.1	67.9	9.0	79.0	13-Nov
4	1.625	8	230.6	20.1	73.3	14.1	79.3	13-Nov
5	2	8	216.4	20.1	59.4	2.2	77.3	15-Nov
6	2.25	8.5	216.4	20.1	57.3	1.5	75.9	15-Nov
7	2.25	9	224.1	20.1	56.8	3.3	73.6	15-Nov
8	2	8.5	224.6	20.1	58.6	6.2	72.5	14-Nov
9	2.25	8.5	216.4	20.1	55.0	4.8	70.3	14-Nov
10	2	8.5	224.6	20.1	59.1	11.2	68.0	14-Nov
Average:			225.3	Total:			750.9	
Average:				Average:			75.1	
Project Engineer Project Engineer							Date (m/d/yyyy) 11/14/2012	
Submit an electronic copy to the Bureau of Structures at: DOTDTSDDStructuresPiling@dot.wi.gov and to the Bureau of Technical Services, Geotechnical Unit at: DOTDTSDDGeotechnicalPiling@dot.wi.gov Also submit a copy to the WisDOT Regional Office. Use extra page for remarks								

8-75.3.5 Bridge Inventory Report, DT 2006 and Bridge Inspection Report, DT 2007 and DT 2008

These forms will be completed whenever work is done on a bridge. The bridge maintenance engineer should be notified by the engineer in a timely manner so the bridge can be inspected after completion, but before the contractor has left the site and the bridge is open to traffic.

Inspection will be done by the bridge maintenance engineer, with assistance provided by the engineer or designee.

A copy of department forms [DT2006](#), [DT2007](#) and [DT2008](#) must be filed in the region maintenance section. A copy of Form [DT2006](#) must be sent to Bureau of Structures for their statewide bridge inventory file. If a local road is involved, a copy of [DT2006](#) is to be sent to the county highway commissioner also.

List of Attachments

- | | |
|------------------------------|---|
| Attachment 1 | Department Plant Certification Program Requirements |
| Attachment 2 | Schedule of Tests |
| Attachment 3 | Plant Inspection Fabrication Forms |