STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
SUPPLEMENT 1079

QUALIFICATION AND EVALUATION OF PRESTRESSED CONCRETE FABRICATORS

January 16, 2015

1079.01	**General**
1079.02	**Facility and Personnel Request Requirements**
1079.03	**Fabricator Quality Control Plan (QCP) Requirements**
1079.04	**Fabrication Facility Evaluation**
1079.05	**Fabricator Quality Control Performance**
1079.06	**Quality Assurance Inspection and Revisions**
1079.07	**Shipping**
1079.08	**Fabricator Rating System**
1079.081	**Prequalified Status**
1079.082	**Provisional Status**
1079.09	**Review Process**
Appendix I	**Facilities Evaluation Checklist**
Appendix II	**Fabricator Rating Forms**
Appendix III	**Material Certification Form**
Appendix IV	**Contact Information**

1079.01 General. This Supplement describes the processes to become a prequalified prestressed concrete fabricator; the levels of qualification; quality control requirements during fabrication; documentation requirements and the Office of Materials Management's (OMM) quality assurance requirements.

The implied subject of this Supplement is the Prestressed Concrete Fabricator.

1079.02 Facility and Personnel Request Requirements. Submit a written request for prequalification to the OMM. Provide the following information with the request:

1. Prestressed Concrete Institute (PCI) plant certification for one of the following levels:

Level 1	- PCI Group B3,	Box Beams with straight strands
Level 2	- PCI Group B3,	I - Beams with straight strands
Level 3	- PCI Group B4,	I - Beams with draped strands

2. The name(s) of the Quality Control Specialist(s) (QCS) who are assigned quality control responsibilities. The QCS will possess:

   a. PCI Level II Technician/Inspector certification

   b. Thorough understanding of the plans, supplements, proposals and Specifications pertaining to Department projects.

   c. All tools and equipment necessary to provide effective quality control according to the Specifications.

   d. Authority to accept/reject materials and stop work.

3. Assignment of QCS and additional quality control staff:

   a. The Fabricator will designate a primary and an alternate QCS, from the list submitted per 1079.02.2, for each prestressed beam project.

   b. Provide additional quality control staff to perform specific quality control functions. Additional staff will be PCI Level I certified and ACI Concrete Field Testing Technician - Grade I certified and/or scheduled to achieve PCI Level I certification within 6 months. Provide the names and certifications for additional staff.

   c. The designated QCS for the project is responsible for the accuracy of the records and acceptance of the prestress members. The QCS may not be used to perform production duties while the Fabricator is performing work toward the completion of a Quality Control Point.

   d. Notify the OMM Cement and Concrete Engineer (CCE) and the OMM QA Inspector of a QCS change for acceptance.

4. Qualified Welders:

   a. If structural welding is performed, welders will be qualified according to Supplement 1011 and AWS D1.5. Provide the name and proof of qualification of the welders.

   b. For reinforcing steel welding, the welder will be qualified according to Supplement 1011 procedures but to the AWS D1.4 welding code.

5. Compressive Strength Testing Technician:

   a. Provide a technician who is ACI Strength Testing Technician certified for compressive strength testing of cylinders for strand release and for final acceptance.

   Notify OMM and the OMM QA inspector of any changes of the compressive strength testing technician. Provide the technician's name and a copy of the ACI certification.

6. Concrete quality control testing personnel:

   a. All personnel performing slump, air, yield, concrete temperature and making cylinders will be ACI Concrete Field Testing Technician - Grade I certified.

7. Tensioning and detensioning personnel:

   a. the person witnessing and inspecting the complete tensioning and detensioning procedure for each project's member(s) shall be at least PCI Level I certified.

1079.03 Fabricator Quality Control Plan (QCP) Requirements. Submit a QCP to the OMM CCE. OMM will evaluate the Fabricator's QCP for acceptance. The QCP shall include, but is not limited to the following:

a) The name and location of the Fabricator's facility.

b) A copy of the facilities PCI certification.

c) Name of person(s) who is responsible for compliance with the QCP; acting as liaison to the Department.

d) Name of the person(s) responsible for quality control (QCS).

e) Names of all technicians who will perform plant inspection, sampling and testing. Use

ACI certified technicians to perform concrete sampling and testing. Use PCI certified technicians for tasks required by PCI.

f) Calibration records of test equipment to be used at the facility.

g) The Department accepted Job Mix Formula (JMF) to be used at the facility.

h) The Fabricator's methods for documenting all quality control inspections, dimensional checks, cambers, coating thicknesses, material certifications, and all other quality control responsibilities

i) A final quality control discrepancy inspection report.

Include the minimum number of quality control measurements per quality control item for each fabricated member and how those measurements will be documented.

If OMM determines that the items in 1079.02 or the initial QCP submitted are not adequate, revise and resubmit for review. Once the QCP has been accepted, OMM will provide notice of acceptance.

1079.04 Fabrication Facility Evaluation. After 1079.03 is accepted, OMM will inspect the Fabricator's facility. During the inspection, furnish the OMM QA Inspector documents to validate that the criteria listed in Appendix I are met. The OMM QA Inspector will determine the Fabricator's ability to operate within the guidelines of PCI, C&MS Item 515 and Supplement 1079.

If the Fabricator's facility, equipment and processes are acceptable, the Fabricator will be notified and added to the Prequalified Fabricators list.

1079.05 Fabricator Quality Control Performance. The accepted QCP and quality control documentation processes are the minimum requirements for the Fabricator's quality control and documentation of any project.

The QCS is responsible for the proper completion of the following:

a. Inspecting the work at all quality control points, as defined by the QCP and Appendix II.

b. Maintaining quality control records

c. Assuring compliance to the plans, Specifications and applicable sections of this Supplement

d. Assuring all materials incorporated into the beams meet all Specification requirements

e. Notifying OMMQA Inspectors of problems found during quality control inspections

f. Maintaining equipment calibrations and records

g. Testing compressive strength of the concrete

h. Completing Appendix III for each bridge to document records, mill certifications, and test results

Incorporating materials that do not meet Specifications or failure to provide adequate documentation showing compliance to the Specifications shall be cause for rejection of the member(s) containing the material(s) and the corresponding deduction(s) in the quality assurance inspections conforming to Appendix II.

Provide a quality control inspection report for all members not meeting Specification requirements at the end of each project. The report shall include,

a. Description of the issue out of Specification

b. Documentation of the action taken to meet Specifications

c. Department's written acceptance of the repairs

Modify the QCP and/or production procedures within 10 business days to eliminate a reoccurrence of the non-compliance issue(s). This modification shall be addressed at all subsequent prefabrication meeting(s) for production until the revised QCP is approved by OMM. Non-compliance items in the Shop Drawing section shall also be remedied.

All quality control documentation shall be signed by the project QCS and the actual QC inspector if other than the project QCS.

1079.06 Quality Assurance (QA) Inspection and Revisions. Throughout the project fabrication processes, OMM will perform quality assurance (QA) evaluations. When the evaluation finds non-compliance items (Appendix II), remedy the issue(s) in accordance with 1079.05.

For all QA inspections, the OMM QA Inspector will review the Fabricator's project quality control documents and perform a physical inspection of bridge members for compliance to the plans and Specifications of the project. The OMM QA Inspector will check the member(s) for applicable quality assurance items listed in Appendix II.

For mandatory quality assurance hold point inspections defined in 1079.081 and 1079.082, coordinate the required hold point schedule with the OMM QA Inspector. Provide the OMM QA Inspector with the quality control discrepancy inspection report as required in 1079.05 and Appendix III at the final inspection. Provide one (1) complete, legible, and ordered copy of the Fabricator quality control documentation and materials records in an electronic format acceptable to OMM at the end of each project**.**

1079.07 Shipping. Once the quality assurance inspection is complete, the OMM QA Inspector, OMM will assign a Sample ID to the bridge members and the OMM QA Inspector will provide a TE-30 form to document that the beams are approved for shipment. Document shipment of the members using the Department's Virtual Warehouse (TE-24 System) using the assigned number. Provide a paper copy of the TE-24 and the "Shipping" TE-30 with each shipment.

1079.08 Fabricator Rating System. OMM's QA Inspectors will perform quality assurance reviews throughout a project's fabrication as outlined in 1079.06 and detailed in Appendix II. Additional random inspections may be performed as the QA inspector deems necessary to adequately evaluate the QC processes.

The results of the fabrication QA ratings, as shown in Appendix II, establish the Fabricator's rating. This rating is reported to the Fabricator and affects the qualification of the Fabricator as follows:

1079.081 Prequalified Status: A Fabricator will be considered Prequalified if the rolling average of five (5) bridge ratings within 36 months is 90% or above; no single bridge rating is less than 80%; and no more than one below 90%. These Fabricators will have the Prequalified QA Hold Point and random QA inspections performed. The required QA Hold Point for a Prequalified fabricator is:

- Final before shipment (Hold Point 10, Appendix II).

A single rating below 80 percent, or the average of five consecutive ratings dropping the average below 90 percent, will result in the Fabricator's qualification being lowered to Provisional status. If a Producer has not actively produced for the Department within 36 months, the specific Producer will be set to

Provisional status as described in 1079.082.

1079.082 Provisional Status: This is an interim level for Fabricators to validate their QC performance in order to upgrade to Prequalified status. Fabricators at the Provisional level will have at least the following QA hold point inspections performed:

- Strand tensioning and pre-pour inspection (Hold Point 5, Appendix II)
- Testing and De-tensioning (Hold Point 8, Appendix II)
- Post inspection (Hold Point 9, Appendix II)
- Final before shipment (Hold Point 10, Appendix II)

The Provisional status is not meant to be a permanent qualification level. New Fabricators able to achieve an average rating above 90 percent in five consecutive bridges within 36 months will be moved to Prequalified status. A single rating between 70 and 80% will be expunged if changes are made to rectify the deficiencies and three (3) subsequent ratings are all above 90%.

Prequalified Fabricators that have been reclassified as Provisional will have three (3) projects to achieve an average of 90%.

1079.09 Rating Review Process. A Fabricator removed from the Certified Producers and Suppliers List may reapply for prequalification if evidence is provided that steps have been taken to resolve problems causing the removal from the list.

A Fabricator may contest a rating received on a project. Step one is a meeting between the Fabricator, the OMM QA inspector, and OMM CCE issuing the rating to discuss the specific rated item(s) in question.

If the Fabricator does not accept the step one resolution, the Fabricator will request, in writing, a reconsideration of the rating by the Department's Review Board. The Review Board is comprised of the Deputy Director, Division of Construction Management, the Administrator of the Office of Materials Management, and the Administrator of the Office of Structural Engineering, or their designated representatives. Submit the written request within 10 days of receiving the OMM's completed total rating. Define the specific areas being disputed and provide documentation or evidence supporting why the rating should be revised.

The Office of Materials Management will schedule a meeting so the Fabricator has an opportunity to present its case to the board. The Department may have representatives at the meeting offering evidence in rebuttal. The Board will consider the evidence and issue its decision within fifteen days of the meeting.

The Board will hear appeals concerning the Fabricator's rating on a specific project. The Board has no authority to hear appeals for revocation or suspension of a Fabricator from the Pre-qualified Fabricators list.

APPENDIX I

OHIO DEPARTMENT OF TRANSPORTATION

1600 W Broad Street, Columbus, OH 43223

Facilities inspection has been performed by the Office of Materials Management (OMM) on: / /

Based upon this report, your facility will be evaluated for acceptance into the Prequalified Fabricator List for Prestressed Concrete Bridge Members as specified by Supplemental 1079

FACILITIES EVALUATION CHECK LIST

Company Name:		
Address:		
Phone:	Fax:	E-Mail:
PCI Certification (Enclose Copy Of Certification)		
Level 1 B3 - Box Beam W/ Straight Strand	**Level 2 B3** - I Beam W/ Straight Strand	**Level 3 B4** - I Beam W/ Draped Strand
Company Representatives	**Name**	**Email Address**
Plant Manager		
Chief Engineer		
Production Superintendent		
Quality Control Specialist		
Prestressed Beds		
Bed 1 - Length (Ft)		
Bed 2 - Length (Ft)		
Bed 3 - Length (Ft)		
Bed 4 - Length (Ft)		
Bed 5 - Length (Ft)		
Bed 6 - Length (Ft)		
Steel Fabrication Facilities		
Reinforcing steel fabrication area		
Adequate bending equipment		
Protection method for epoxy coating on reinforcement		
Method of cage construction		
Welders AWS qualified (Reinforcing / Structural)		
Concrete Testing Facility		
Capacity of testing machine		
Calibration documentation		
Capping method		
Capping equipment		

ODOT Inspectors Office
Minimum floor area of 120 square feet (11 M^2).
Minimum ceiling height of 7 feet (2.1 M).
Adequate storage facilities, lighting, electrical outlets, and ventilation.
Adequate work spaces include desk space, lockable files or storage cabinets.
Heat capable of maintaining a temperature of not less than 68 °F (20 °C).
Telephone with direct access to outside trunk line for the inspector's exclusive use.
Set of keys for lockable files or cabinets in the office.
Located within 100' of the QC office.
Lifting Capacities
Crane capacities
Concrete
Source
Mix Design
Established QC procedures
Moisture control
Batching Epupment, sequence and procedures
QC For Strand
Written procedures for strand tensioning
Straight strand
Draped strand
Written procedures for strand release
Straight
Draped
Method of de-bonding
QC Controls For Materials
Cement
Aggregate
Admixtures
Reinforcing
Strand
Remarks

Appendix II
Prestress Concrete Fabricator Rating
Fabrication

Fabricator	**Project No.**	**SFN**			
QA Inspector			**Y = Item Complied N = Item In Non Compliance NA = Not Applicable**		
Hold Point Descriptions		**Points**	**Y**	**N**	**NA**
Shop Drawings Information		**HOLD POINT SD**			
1. Project number (PID)/ LPA properly identified		**3**			
2. Reference number provided		**3**			
3. Bridge number and SFN provided		**2**			
4. Adequate details to properly produce beams		**3**			
Hold Point SD Subtotal		**11**			
Strand and Steel Reinforcing Materials		**QA HOLD POINT 1**			
1. Certified test data's heat number matches tagging identification on rebar and strand		5			
2. Yield strength of reinforcing meets plan requirements, fy (psi)		3			
3. Tensile strength of reinforcing steel meets plan Specifications, fu (psi)		1			
4. Tensile strength of prestressing strand meets plans and Specifications, fu (psi)		5			
5. Strand and reinforcing inspected for acceptable surface conditions, rust, etc.		1			
Hold Point 1 Subtotal		**15**			
Concrete Mix Inspection		**QA HOLD POINT 2**			
1. Concrete mix design matches OMM approved design		5			
2. Batch weights controlled to within PCI tolerances		3			
3. Corrosion inhibiting admixture batched correctly		3			
4. Aggregates stored and handled properly to minimize segregation and contamination		2			
Hold Point 2 Subtotal		**13**			
Reinforcing Inspection - Pre-Form:		**QA HOLD POINT 3**			
1. Pre-fabrication - cages and WWF meet dimensional requirements		5			
2. Individual bars checked for dimensions, size and grade before installation		1			
3. Tack welded assemblies, welds acceptable and rebar coating repaired		3			
4. Welders qualified D1.4 (D1.5 if performing structural plate welding)		2			
5. Welder following qualified procedure for reinforcing		2			
6. Lap lengths built into longitudinal bar assemblies meet requirements; stirrups properly spaced		2			
Hold Point 3 Subtotal		**15**			

Hold Point Descriptions	Points	Y	N	NA
Form Inspection	**QA HOLD POINT 4**			
1. Cross-section dimensionally correct	3			
2. Skew ends meet dimensions and angle	2			
3. Hold down points located as per shop drawings (+/- 6 inches)	3			
4. Holes plugged and flush, welds ground flush	1			
5. Form joints sealed	1			
6. Forms string lined for straightness and acceptable flatness	2			
7. Length of members conform to Specifications; bulkheads correctly installed	4			
Hold Point 4 Subtotal	**16**			
Strand Tensioning Pre-Pour Inspection:	**QA HOLD POINT 5**			
1. Strand diameter & type correct, clean and free of oil dirt, etc.	5			
2. Strands inspected in bed for nicks, gouges	2			
3. Correct strands debonded at the correct length	3			
4. Check elongation established using strand reel modulus of elasticity (E), Measured; area of strand and corrections for temperature, bed shortening, Additional strand length due to draping, slippage at ends and seating losses	5			
5. Jacking equipment calibrated as per Specification	2			
6. Written strand stressing procedure at jacking location	1			
7. Pre-load applied	2			
8. Strands loaded symmetrically, final load applied, elongation checked	6			
9. Draped strand force at bed ends shall be validated to be within 5%	4			
Hold Point 5 Subtotal	**30**			
Reinforcing Placement Pre-Pour Inspection:	**QA HOLD POINT 6**			
1. Reinforcing steel sizes correct, clean , coating repaired	5			
2. Clearance of reinforcing and strand from forms meets concrete cover	3			
3. Lap splice reinforcing installed and meet Specifications	3			
4. Reinforcing adequately tied against movement	2			
5. Guardrail and inserts installed correctly	3			
6. Reinforcing located as per shop drawings	2			
7. Tie-rod , shipping and anchor holes dimensionally correct	2			
8. Release agent applied on forms	1			
9. Lifting devices installed	3			
Hold Point 6 Subtotal	**24**			

Hold Point Descriptions	Points	Y	N	NA
Member Fabrication Concrete QC	**QA HOLD POINT 7**			
1. Air, slump and unit weight tested and meet requirements	3			
2. Verification cylinders made	5			
3. Concrete consolidation provides an acceptable finish free of voids and excessive bugholes	2			
4. Air and Slump tested a minimum of every 20 yd^3 or 2 tests per fabricated member	2			
Dimensional				
5. Concrete cover checked during placement	3			
6. Concrete depth checks performed for top and bottom flange; meet Specifications	4			
7. Composite reinforcing checked for extension out of member, cleanliness and damage	2			
8. Voids inspected for location after concrete placed (box beam)	4			
9. Top of member surface finish meets Specifications	1			
10. Lifting devices and inserts final location meet Specifications	4			
Cure Application				
11. Protection of concrete before initial set performed	2			
12. Initial Set time of mix exceeded before accelerated cure applied	3			
13. Maximum temperature (160^{o}F) and rate of change (40^{o}F/hr) measured during accelerated cure	5			
14. Cylinders cured as per member	3			
Hold Point 7 Subtotal	**43**			
Testing And Detensioning:	**QA HOLD POINT 8**			
1. Cylinders tested for release strength	5			
2. Cylinder testing equipment calibrated	1			
3. Cure removed and rate of temperature decrease controlled to less than 50^{o}F//hr	2			
4. Detensioning procedure performed approved procedure and sequence	4			
5. Initial camber checked for each beam and recorded	2			
Hold Point 8 Sub Total	**14**			
Post Inspection	**QA HOLD POINT 9**			
1. Beam length dimensionally correct	3			
2. Cavities in concrete surfaces repaired	1			
3. Honeycombing inspected and documented QA inspector notified	2			
4. Validate dimensional locations of tie-rods, guardrails and other inserts	3			
5. Sweep meets required tolerances	2			
6. Composite reinforcing meets required clearance	1			
7. Reinforcing steel coating inspected and repaired as per requirements	1			
Hold Point 9 Subtotal	**14**			

Hold Point Descriptions	Points	Y	N	NA
Final Inspection Before Shipment	**QA HOLD POINT 10**			
1. Cylinders tested for 28 day strength to meet Specifications	5			
2. Final camber measured for each beam. For box beams evaluated against adjacent members and tolerances for all beams evaluated against tolerances. Camber report sent to Contractor, Project and OMM	4			
3. Final sealing applied; document cleaning, surface preparation and rate of application	3			
4. Inspection for cracks, lifting damage, etc.; properly repaired and documented	3			
5. QC inspection documentation complete and accurate	5			
Hold Point 10 Sub Total	**18**			

Calculating The Fabrication Rating

	Hold Point	Yes / (Yes + No)	Weight Factor	Rating Total
SD	Shop Drawing Information		x 0	
1*	Strand And Steel Reinforcing Materials		x 12	
2	Concrete Mix Inspection		x 10	
3	Reinforcing Inspection - Pre-Form		x 5	
4	Form Inspection		x 5	
5*	Strand Tensioning Pre-Pour Inspection		x 16	
6	Reinforcing Placement Pre-Pour Inspection		x 7	
7	Member Fabrication - Concrete QC		x 12	
8*	Testing And Detensioning		x 13	
9	Post Inspection		x 8	
10*	Final Inspection Before Shipment		x 12	
			Rating Summation	

* Indentifies Critical Hold Points (1, 5, 8, and 10). If any of Critical Hold Points are lower than the rating summation, the Fabrication Rating is equal to the lowest of the Critical Hold Point ratings.

Final Fabricator Rating	

Required Hold Points:

Prequalified - Hold Point = 10
Provisional - Hold Points = 5, 8, 9 And 10

Appendix III
Materials Certification Form

Fabricator **Project No** **SFN**

Cement			
Manufacturer	**Plant Location**	**Type**	**Inspector Approval**

Cementitious Materials (Fly Ash, GGBF Slag, Micro Silica)			
Manufacturer	**Plant Location**	**Type**	**Inspector Approval**

Fine Aggregate				
Producer	**Location**	**Type**	**Soundness %**	**Inspector Approval**

Coarse Aggregate					
Producer	**Location**	**Deleterious Materials**	**Soundness %**	**Abrasion %**	**Inspector Approval**

Admixtures (Corrosion Inhibitor, Retarding, Air Entraining, Superplasticizing, Accelerating...)				
Manufacturer	**Brand Name**	**Admixture Type**	**Dosage Rate**	**Inspector Approval**

Reinforcing Steel						
Rebar Size (Epoxy / Black)						
Heat Number						
Inspector Approval						

Welded Wire Fabric Reinforcing						
Mesh Size						
Heat Number						
Inspector Approval						
Prestressing Strand						
Nominal Diameter /Grade						
Reel Number						
Heat Number						
Inspector Approval						

Transverse Tie Rod						
Nominal Diameter						
Heat Number						
Inspector Approval						

Inserts (Including Embedded Inserts, Bolts, Nuts, Washers, Coupling Nuts)					
Insert Description					
Heat / Lot Number					
Inspector Approval					

Fabricated Plate (Bearing Insert Plates, Welding Connection Plates, Etc.)					
Description					
Length Width Thickness					
Heat Number					
Coating Lot					
Certifications Provided					
Inspector Approval					

Appendix IV Contact Information

Office of Materials Management
1600 West Broad St.
Columbus, OH 43233

Administrator
Phone: (614) 275-1351

Cement and Concrete Engineer
Phone: (614) 275-1325

Transportation Manager (Shop Drawing Submittals)
Phone: (614) 275-1326

Office of Structural Engineering
1980 West Broad St.
Columbus, OH 43233

Administrator
Phone: (614) 466-2463

Assistant Administrator
Phone: (614) 466-2464