

APPENDIX B09

STRUCTURAL STEEL AND MISCELLANEOUS METALS PRODUCER QUALITY CONTROL PLAN CHECKLIST

Instructions for filling out Checklist:

1. The standardized section at the beginning of the checklist was designed to record general LIMS production facility information. Some of this information may not be applicable to all production facilities.
2. The section numbers in this checklist are references to AASHTO/NSBA S 4.1 – 2002 – Steel Bridge Fabrication QC/QA Guide Specification, Part B – Quality Control

Company: _____ Vendor #: _____
 Mailing Address: _____ ID #: _____
 City: _____ State: _____ Zip Code: _____
 Physical Address (if different than above): _____
 City: _____ State: _____ Zip Code: _____
 Terminal or Plant: _____ Permanent or Portable: _____
 X / Y Coordinate: _____ / _____ County: _____
 Contact Person: _____ Phone #: _____
 E-Mail Address: _____ Fax #: _____
 QCP Received: _____ QCP Dated: _____ Date Reviewed: _____
 Evaluated by: _____ Accepted, Y / N: _____

Decimal Latitude / Decimal Longitude Coordinates
 (examples: 27.43251, 101.25698
 32.54321, -100.54321)
 _____ / _____

QCP Item	Y/N	QCP Pg.
3.0 Qualifications and Experience		
3.1 – Does Quality Control Inspectors' Fabrication Inspection Experience meet minimum requirements?		
3.2 – Does Quality Control Inspectors' Coatings Training and Inspection Experience meet minimum requirements?		
3.3 – Is the Recommended Inspection Equipment listed?		
4.1 - Quality Control Plan		
4.1.1 – Does the QCP detail the quality control procedures?		
4.1.2 – Does the QCP describe the means and methods for ensuring satisfactory materials and workmanship?		
4.1.3 – Is the QCP signed by QC Manager?		
4.1.4 – Does the QCP have a signed statement by management?		
4.1.5 – Does the QCP describe the organization?		
4.1.6 – Does the QCP describe the structure of the QC department?		
4.1.7 – Does the QCP describe the responsibilities of the Quality Control Inspectors?		
4.2 - Quality Assurance Inspector (QAI) Facilities		
4.2.1 – Does the QCP describe the QAI office facilities?		
4.2.2 – Does the QCP describe the QAI office location?		
4.2.3 – Does the QCP describe the QAI office equipment and storage?		
4.2.4 – Does the QCP describe the QAI office communication equipment?		

4.2.5 – Does the QCP describe maintained restrooms, fax and copy machines, and parking?		
4.3 - Inspection and Testing Equipment		
4.3.1 – Does the QCP describe routine checks and calibrations for the testing equipment?		
4.3.2 – Does the QCP describe how the calibration records are maintain and readily accessible by the QAI?		
4.4 - Control of Raw Materials		
4.4.1 – Does the QCP describe methods to inspect all incoming materials?		
4.4.2 – Does the QCP detail methods to verify that no repairs have been made at the producing mill except as allowed in ASTM A 6? NOTE: Fracture critical members must not have any welded repairs unless authorized in writing by the Department.		
4.4.3 – Does the QCP describe methods to verify material surface quality prior to fabrication?		
4.4.4 – Does the QCP describe established: inspection points, responsible party for inspection, acceptance criteria, and procedures to repair defects?		
4.5 - Welding Procedures and Consumables		
4.5.1 – Does the QCP detail established procedures for welding control? (Welding Procedure Specifications, Procedure Qualification, etc.)		
4.5.2 – Has the fabricator established procedures for control of welding consumables?		
4.6 - Nondestructive Examination		
4.6.1 – Does the QCP describe an established practice that conforms to AASHTO/AWS D1.5 (or D1.1 as applicable)?		
4.6.2 – If NDE services are contracted out, does the QCP detail how the Fabricator ensures that the NDE agency's staff satisfy applicable ASNT requirements?		
4.6.3 – Does the QCP detail how the Fabricator will provide a copy of written NDE practices upon request?		
4.6.4 – Does the QCP describe the NDE training and certification records availability?		
4.6.5 – Does the QCP detail methods to permit QAI access to the testing facilities and records upon request?		
4.7 - Nonconformance Control		
4.7.1 – Does the QCP detail methods for controlling nonconforming material?		
4.7.2 – Does the QCP establish standard shop repair methods? NOTE: Standard repair welding procedures must be pre-approved by the Department.		
4.7.3 – Does the QCP describe the equipment and systems necessary to segregate materials requiring corrective work?		
4.7.4 – Does the QCP describe methods reclaim or rework nonconforming materials only in accordance with procedures acceptable to the Department?		
5.1 - QCP Requirements		
5.1.1 – Does the QCP describe the plant's level of AISC certification?		
5.1.2 – Does the QCP describe the certification and qualification requirements for all QCIs?		
5.1.3 – Does the QCP describe procedures for qualifying tackers, welders, and welding operators and for updating and maintaining their qualification documentation?		
5.2 - Fabricator Certification		
5.2.1 – Is the certification by AISC in the category appropriate for the type of work being performed is required?		

5.2.2 – Does the QCP detail how the Fabricator will resolve any findings noted in the AISC exit interview reports prior to fabrication?		
5.3 - QCI Certification and Qualifications		
5.3.1 – Does the QCP list the QCIs who are Certified Welding Inspector (CWI) or equivalent, in accordance with the Bridge Welding Code?		
5.3.2 – Does the QCP list the QCIs performing who are NDE qualified in accordance with the Bridge Welding Code?		
5.3.3 – Does the QCP list QCIs for coatings who are qualified in accordance with Section 3?		
5.4 - Welder/Welding Operator Qualifications		
5.4.1 – Does the QCP document the following?		
(a) the name of the department or position responsible for maintaining documentation of the qualification program		
(b) the extent to which independent testing laboratories will be involved in qualification		
(c) the extent to which the QC department will be involved in qualification		
(d) the responsible party for selecting and testing qualification plates, authentication or test reports, and the disposition or specimens		
(e) appropriate forms and records		
(f) fabricator method for documenting continued experience		
(g) fabricator's master list of qualified welders, welding operators, and tack welders		
(h) qualification actions taken when new equipment or consumables are introduced in the shop		
5.4.2 – Does the QCP describe how all welder qualification test results will be made available to the Department?		
6.1 - QCP Requirements		
6.1.1 – Does the QCP describe the procedures for maintaining records (see 6.2)?		
6.1.2 – Does the QCP describe handling and control of records required for material or weld traceability and verification (see 6.3)?		
6.1.3 – Does the QCP identify shop personnel responsible for preparation of records and reports?		
6.1.4 – Does the QCP include sample forms?		
6.2 - Records		
6.2.1 – Does the QCP describe methods to maintain current and complete records of inspections, measurements, and tests?		
6.2.2 – Does the QCP describe methods to make records available to the QAI during all work periods?		
6.2.3 – Does the QCP detail methods to document, report, and keep records of reportable non-conformances?		
6.2.4 – For items that require full or partial shop assemblies, does the QCP describe the Fabricator's process to submit to the QAI signed reports of required measurements, indication of compliance or deviations noted, and pictures if available?		
6.2.5 – Does the QCP describe methods to provide test reports and summaries of all required NDE to the QAI?		
6.3 - Material Traceability		
6.3.1 – Does the QCP detail methods to review MTRs for specification compliance before submittal?		
6.3.2 – Does the QCP describe methods to control, identify, and MTRs for steel materials used from the stock or from warehouse purchases? Does the QCP describe methods to provide the MTRs to the QAI as requested?		

6.3.3 – Does the QCP detail methods to identify and trace material for primary members throughout fabrication?		
6.3.4 – Does the QCP describe methods to correlate mill-identified materials with shop drawing piece marks, and supply a copy of this information to the QAI?		
7.1 - QCP Requirements for Inspection		
7.1.1 – Does the QCP define quality control actions to address all points listed in 7.2 through 7.10?		
7.1.2 – If applicable, does the QCP include the inspection or monitoring frequency established by the fabricator for all points in 7.2 through 7.10?		
7.1.3 – Does the QCP describe QCI record-keeping?		
7.2 - Preparation of Material		
Does the QCP address the following?		
(a) Identification and marking of materials		
(b) Quality of cut and sheared edges		
(c) Plate quality, with notation of surface and internal defects and repair		
(d) NDE requirements and acceptance criteria for repairs		
(e) Dimensional accuracy of component parts, whether fabricated or pre-manufactured		
7.3 – Fitting		
Does the QCP address the following?		
(a) Dimensional accuracy and fit of all components		
(b) Specified tolerance of members prior to welding		
(c) "Mill to bear" and "tight fit" conditions		
7.4 – Welding		
Does the QCP address the following?		
(a) Cleanliness (absence or condition of unacceptable mill scale, rust, or contaminants)		
(b) Joint preparation		
(c) Properly cleaned tack welds of suitable quality and size		
(d) Use of approved welding procedures		
(e) Weld quality and soundness requirements per Bridge Welding Code		
(f) Welders qualified for process and position to be welded		
(g) Interpass cleaning and temperature		
(h) Weld backgouging and cleaning		
(i) Fillet weld size, placement and profile		
(j) Groove weld reinforcement		
(k) Grinding or finishing of welds		
(l) Avoiding, pre-compensating for, and correcting welding-induced distortion		
(m) Visual weld quality		
(n) Post heat as required		
(o) Storage, handling, and reuse of SAW flux and SMAW electrodes		
7.5 - Cambering, Curving and Straightening		
Does the QCP address the following?		
(a) Adequate blocking elevations and intervals		
(b) Following Department-approved calculations for locations of applied external forces or restraints, when required by the contract		
(c) Size and locations of heating patterns		
(d) Maximum temperatures and proper temperature monitoring		
(e) Controlled cooling		
(f) Final dimensions		

7.6 - Shop Assembly of Main Members		
Does the QCP address the following?		
(a) Dimensional accuracy of each piece (deviation from specified length, camber, sweep)		
(b) Individual member distortion, local and overall (twist, sweep, out of flatness of flange or web)		
(c) Clearance or bearing fit of adjacent members in assembly		
(d) Assembly blocking dimensions and curve and camber offsets and elevations		
(e) Splice plate and secured fill plate dimensions and fit (gaps, non-parallel)		
(f) Bolt hole accuracy, including adequate edge distances		
(g) Bolt hole condition, including shape and squareness to faying surface		
(h) Match-marking of splice plates and correct location of all piece marks		
(i) Removal of drilling burrs		
(j) Preparation and documentation of "as built" shop assembly report		
7.7 - Cleaning		
Does the QCP address the following?		
(a) Proper solvent cleaning to remove surface contamination prior to mechanical cleaning		
(b) Blast media gradation and cleanliness		
(c) Verification and documentation of required surface cleanliness and profile		
(d) Checking the compressed air system for contaminants, especially if used to remove shot		
(e) Proper functioning of automated blasting equipment		
(f) Treatment of material defects (scabs, fins, slivers) exposed by blasting, including re-blasting if necessary after repairs		
(g) Proper corner and edge treatment as required for coating system		
7.8 - Coating		
Does the QCP address the following?		
(a) Coating sampling by manufacturer or by the Fabricator, including witnessing and delivery to the Department		
(b) Use of Department-approved coating batches		
(c) Maintenance of airline oil and air moisture traps		
(d) Equipment for mixing, application, repair, film measurement, and safety		
(e) Mixing and Agitation		
(f) Monitoring pot life		
(g) Application methods: spray nozzles, patterns, and sequencing for typical configurations and for areas inaccessible for spraying (snipes, restricted)		
(h) Coating repair for damage, dry spray, runs, sags, and under- or over-thickness		
(i) Control of thinning, when permitted		
(j) Ambient temperature, steel temperature, relative humidity, and dew point		
(k) Control of millage, wet and/or dry, as applicable (millage control per SSPC PA2)		
(l) Intervals between coating applications		
(m) Cure assessment		
(n) Documentation for materials used, ambient conditions, cure verification, dry film thickness and/or wet film thickness readings, and problems and corrections		

7.9 - High-Strength Fastener Shop Installation		
Does the QCP address the following?		
(a) Material verification prior to installation (material certifications, rotational capacity testing, etc.)		
(b) Fastener Markings		
(c) Contact surface and hole quality		
(d) Function and calibration of fastener tension device and torque wrench		
(e) Execution of rotational capacity testing		
(f) Check-torque for verification or proper tightening		
(g) Fastener dimensions and condition, especially proper lubrication		
(h) Use of hardened washer under the turned element during installation		
(i) Verification that all fasteners in a joint are brought to snug-tight condition prior to final tightening		
(j) Verification that fasteners are tightened from the most rigid part of a joint towards its free edges and that the wrench is returned to previously tightened bolts to "touch up" any bolts which may have been relaxed from tightening other bolts in the joint		
(k) Verification of full engagement of bolts (tip flush or beyond nut face)		
7.9.1 – Turn-of-nut tightening		
(a) Proper snug-tight sequence		
(b) Nut rotation (marks on bolt tip and nut)		
(c) Verification of proper tightening		
7.9.2 – Calibrated wrench tightening		
(a) Torque-to-tension relationship		
(b) Verification that wrenches are set to provide proper fastener tension and are calibrated at proper intervals		
(c) Recalibration of wrenches when necessary		
(d) Maximum allowable fastener head or nut rotation		
7.9.3 - Alternate Fastener Methods		
(a) Verification of load-indicating washer characteristics		
(b) Placement and interpretation of load-indicating washers		
(c) Snug tightening cycles before twist-off of control or indicator element		
(d) Procedures for snugging and full tensioning with lock pin and collar bolts		
7.10 - Loading and Shipping of Fabricated Members		
Does the QCP address the following?		
(a) Written acknowledgement of QA acceptance before loading		
(b) Loading, blocking, cushioning, and securing		
(c) Repair of all areas where shop protective coating has been damaged		
(d) Visual inspection of all loaded members		