Every painting project begins with the expectation that the result will be a painted structure that will be protected for a minimum period of time. Owners rely on tools such as the specifications, contractor certification, quality control, and quality assurance inspection to verify that the work is performed as specified. While many projects require quality control and/or quality assurance inspections, few specifications, if any, differentiate between the two or provide guidance on the responsibilities of each.

After discussing the difference between the functions of quality control and quality assurance, this article reviews the SSPC certification program requirements, other recognized industry standards, and transportation specifications that establish minimum standards of practice for quality control and quality assurance. It concludes with recommendations for maximizing the benefits of both quality control and quality assurance.

Evolution of QC and QA in the Coatings Industry
When the coatings inspection industry began to evolve in the 1970s, there was little distinction between the roles of QC and QA. Most early coating inspection was performed as a response to the inspection parameters established in the nuclear power industry and A NSI/ A SME N45.2.6, “Qualification of Inspection, Examination and Testing Personnel for Construction Phase of Nuclear Power Plants,” and A NSI N101.4, “Quality Assurance for Protective Coatings Applied to Nuclear Facilities.” These standards defined the qualifications of coatings inspectors and inspection tasks that were required during installation or maintenance of nuclear power facilities. A NSI N45.2.6 specifically applied to third-party inspectors retained by the owner to perform hold point inspection of contractor activities. As coating inspection expanded beyond nuclear power into industries like transportation and water storage and supply, most owners continued to rely on third-party inspection to verify that contractor activities were per-
formed according to the specification.

In the 1990s and 2000s, with the increased recognition of the International Organization for Standardization (ISO), American Society of Quality (ASQ), and other certifying organizations, more owners, consultants, and contractors started moving to the concept of a total quality system with a clear division between QC, conducted by the contractor, and QA, conducted by the owner or a third-party owner’s representatives. Owners began to recognize that while third-party inspection was still necessary, it was not intended to replace the contractor’s QC.

Unfortunately, this awareness has not always been transferred to the specifications as particular QC requirements. The result is that QA personnel still perform the primary role of inspecting and accepting the work. When the roles of QC and QA personnel are not defined, a critical component of a total quality system is lost, and conflict can arise between QA and contractor personnel. But when the QC and QA personnel perform their respective tasks during coating system installation, the end product improves.

**QA vs. QC:**

**What’s the Difference, Anyway?**

Quality Control (QC) is performing the necessary observations, testing, and documentation to verify that the work performed meets or exceeds the minimum standards established by the project specifications or contract. QC is the contractor’s responsibility.

Quality Assurance (QA) is an audit process to verify that the quality of work performed is what was inspected and reported by the contractor’s QC. QA is conducted by the owner or by a third-party inspector on the owner’s behalf. QA may include reviewing QC documentation, observation of QC testing or actual testing on a spot or periodic basis.

Basically, then, the contractor is fully responsible for every aspect of the project from the equipment and materials, and experience and training of personnel, to the quality of the final product. QC is a full-time requirement and has responsibilities for every aspect of the surface preparation and painting process. QA can be full- or part-time, or performed at specific stages (e.g., following surface preparation) of the project to verify the adequacy of the contractor’s QC. When the owner does not perform QA or provides limited QA inspection, half of the total quality management process is lost.

Both QC and QA are necessary to verify specification compliance and quality work, but an owner (or third-party inspector) performing QA on a project does not relieve the contractor of the responsibility of performing QC.

---

**TABLE 1 / Division of QC and QA Hold Point Inspections**

<table>
<thead>
<tr>
<th>Hold Point Inspection</th>
<th>Quality Control</th>
<th>Quality Assurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient conditions (pre-preparation)</td>
<td>TD</td>
<td>TD</td>
</tr>
<tr>
<td>Pre-surface preparation conditions (welds, rust, edges, etc.)</td>
<td>VO</td>
<td>VO</td>
</tr>
<tr>
<td>Pre-surface preparation conditions (grease, dust, etc.) and/or SP 1</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>Surface preparation equipment operation and abrasive size/type</td>
<td>VDT</td>
<td>RVD/VT</td>
</tr>
<tr>
<td>Abrasive cleanliness</td>
<td>TP</td>
<td>TP</td>
</tr>
<tr>
<td>Compressed air cleanliness</td>
<td>TD</td>
<td>RDT</td>
</tr>
<tr>
<td>Soluble salt contamination</td>
<td>TO</td>
<td>RDT</td>
</tr>
<tr>
<td>Soluble salt remediation</td>
<td>VO</td>
<td>VO</td>
</tr>
<tr>
<td>Ambient conditions (pre-mixing and application)</td>
<td>TD</td>
<td>TD</td>
</tr>
<tr>
<td>Mixing and materials (batch nos., pot life, thinner, etc.)</td>
<td>VO</td>
<td>RDT</td>
</tr>
<tr>
<td>Application equipment operation (pressures, agitation, type, etc.)</td>
<td>VDT</td>
<td>RVD/VT</td>
</tr>
<tr>
<td>Compressed air cleanliness (spray application)</td>
<td>TD</td>
<td>RDT</td>
</tr>
<tr>
<td>Wet film thickness</td>
<td>TO</td>
<td>RDT</td>
</tr>
<tr>
<td>Stripe coat, caulking, intercoat cleanliness, etc.</td>
<td>VO</td>
<td>RVD</td>
</tr>
<tr>
<td>Dry film thickness</td>
<td>TO</td>
<td>TO</td>
</tr>
<tr>
<td>Visual appearance (runs, drips, sags, etc.)</td>
<td>VO</td>
<td>VO</td>
</tr>
<tr>
<td>Repairs</td>
<td>VO</td>
<td>VO</td>
</tr>
</tbody>
</table>

**Legend**

- **Frequency of Verification:**
  - D = Daily
  - O = Occurrence-based
  - P = Periodic

- **Type of Verification:**
  - V = Visual
  - T = Testing
  - R = Review of QC report or testing

---

**Control of Work:**

**A Critical Difference**

Only the contractor’s QC person has the authority to direct the contractor’s employees or production operations. When a contractor is required to retain a third-party QC representative, that person is not a direct employee of the contractor and may not have the authority to direct the contractor’s workers or ensure that they correct their work when needed. Similarly, limitations may be found when the owner requires the coating manufacturer’s technical representative to perform QC functions; there is no contractual relationship; observations may not be free from bias; conflicts between the manufacturer and contractor may result; and neither QC nor QA is provided.

But when the owner’s staff performs QA (with direct staff), the owner has a contractual relationship with the contrac-
tor, and therefore can exert control through the contract (or by withholding payment or stopping work) when operations or conditions are non-conforming.

Third-party QA subcontracted to the owner does not have a contractual relationship with the contractor; therefore, the third-party QA inspector typically can only document the non-conformance of the contractor’s operations and advise the contractor or the owner. If the contractor fails to correct the non-conformance, the owner must decide whether to stop work, withhold payment, accept the non-conformance or take other action.

But whoever performs QA must be careful not to direct or unduly interrupt contractor operations due to potential contract issues regarding control of the work and costs related to work stoppages.

**Sequence of QC and QA**

The specific duties of QC and the QA personnel will vary from project to project. The coating inspection process typically dictates that after certain activities (e.g., surface preparation), work should be inspected, rework performed as necessary, and the surfaces accepted by QC and QA staff before the contractor can move on to the next step of the project. These specific inspection items are typically referred to as “hold points” (Table 1).

Generally, the QC inspection of each hold point should occur first, and any non-conforming items identified should be corrected, reinspected and accepted by the QC inspector. The QA inspection should only occur after the work (hold point) has been inspected and accepted by the QC inspector. The QA inspector should then verify that the work the QC inspector accepted meets the requirements of the specification. If the QA inspector identifies non-conforming items, they should be repaired and reinspected by the QC inspector before the QA inspector accepts the work and the contractor proceeds to the next step of the painting process. It is often helpful, if not necessary, to have the QC inspector and the foreman present during the QA observations so that any deficiencies can be identified and confirmed by all parties. This also allows the QC inspector and the foreman to clearly identify areas requiring rework to the laborers and reduces production delays.

The QA observations may include a review of the contractor’s QC tests or documentation and duplicate inspection or testing of certain hold points (e.g., dry film thickness measurements) to verify that the contractor’s reported results reflect the quality of the work. When results of QC and QA inspection differ, the QA observations typically supersede those of the QC. The resolution of differing QC and QA observations should be defined in the project specification or agreed upon by all stakeholders in the pre-job meeting.

**SSPC’s Approach to QC and QA**

SSPC: The Society for Protective Coatings (SSPC) has established four qualification procedures (QP) for contractors that include minimum requirements for QC.

- **SSPC-QP-1**, “Standard Procedure for Evaluating Qualifications of Painting Contractors (Field Application to Complex Structures),” establishes specific requirements for the qualifications and duties of the contractor’s QC personnel on field coating application projects.
- **Three other standards** have similar requirements: QP 3, “Standard Procedure for Evaluating Qualifications of Shop Painting Applicators”; QP 8, “Standard Procedure for Evaluating the Qualifications of Contractors that Install Polymer Coatings and Surfacing on Concrete and Other Cementitious Substrates”; and QP 6, “Standard Procedure for Evaluating the Qualifications of Contractors Who Apply Thermal Spray (Metallizing) for Corrosion Protection to Steel and Concrete Surfaces.” QP 6 requires QP 1 or QP 3 certification, also.

Each standard above identifies minimum requirements for quality control personnel, programs, inspections, and documentation. The following provides a brief review by key topic. While the specific QC duties are not well defined in the SSPC-QP standards, the supporting documentation required by the respective standards sometimes provides additional insight on the requirements for the contractor’s QC.

**Minimum QC Qualifications: Under QP 1 and QP 3, the QC supervisor is responsible for oversight of the QC inspectors. The QC supervisor is required to have three to five years of experience and formal training. The QC inspector is to have a minimum of two years of experience and formal training for QP 1; however, QP 3 allows the QC inspector to substitute in-house training for formal training. QP 8 requires the QC manager and QC inspectors to have two years of experience, 8 hours of general QC training, and 16 hours of concrete training. QP 6 refers to the thermal spray supervisor (TSS) and thermal spray inspector (TSI) rather than QC. It requires the TSS to have minimum of two years of experience and qualification under internal programs. The TSI must be internally qualified to perform thermal spray inspections.**

There is no established curriculum, duration, or evaluation of knowledge or practical testing required under the QP 1 and QP 3 standards. Refresher training is not required by any QP standards.

**Written Procedures/Quality Manuals:** QP 1 requires the contractor to have written procedures to ensure that major operations (surface preparation; primer, intermediate, and top coat applications) are inspected. It suggests that these pro-
procedures are components of a “QC Manual.” QP 3 simply requires the QC to have relevant inspection standards. QP 8 specifically details standard operating procedures that must be included in the contractor’s QC manual. QP 6 requires the contractor to have formal written procedures for performing and documenting inspections.

A authority of the QC/Management: QP 1 requires written authority for the QC inspectors to report directly to management and have to have authority to stop work for non-conformances. QP 3 is similar but requires evidence that the QC inspector reports directly to management, not to a production-related supervisor or manager. QP 8 and QP 6 do not define the authority of the QC. QP 6 requires the TSS to be on-site and involved in material and equipment decisions.

QC Inspection Hold Points: QP 1 does not define the specific hold points for QC. However, the SSPC-QP 1 Annual Internal Audit Report/Checklist for SSPC Certified Contractors (Rev 02/04) indicates that hold point inspections are to be conducted during each major operation: pre-cleaning, surface preparation, primer, intermediate coat, topcoat application, and cure.

QP 3 defines hold points for receipt of items to be coated, inspection of repaired and coated items, storage of repaired and coated items, surface preparation, storage of coating materials, handling, repair, labeling, and handling and shipment, among others.

QP 8 requires hold point inspections based upon the detailed requirements of the QC plan. QP 6 requires hold point inspection for major operations defined in the written procedures.

Other Organizations that Define QC and QA Responsibilities

NACE
The NACE International Coating Inspection Program (CIP) began certifying coatings inspectors over 20 years ago. The CIP establishes three levels of certification for individual coatings inspectors (regardless of whether they perform QC or QA).

The NACE training provides a comprehensive review of the observations, tests and examinations that may be performed by a coating inspector during the coating process but does not define them relative to QC and QA. The student manual for Session 1 (7/1/98), The Coating Inspector’s Checklist, indicates inspection tasks ranging from pre-surface preparation to coating application.

ANSI/ASME
ANSI/ASME N45.2.6, Qualification of Inspection, Examination and Testing Personnel for Construction Phase of Nuclear Power Plants, establishes criteria for companies to internally certify individual coatings inspectors through experience, education, and testing as Level I, II, or III coating inspectors. The SSPC-QP 5 standard adopted the levels used by ANSI/ASME N45.2.6.

ASTM International
ASTM International has several standards that discuss coating inspectors and responsibilities but without differentiating between QC and QA. ASTM standards discussing inspector responsibilities or inspection and inspection activities related to applicator certification include the following:

• D 4227-99, Standard Practice for Qualification of Coating Applicators for Application of Coatings to Concrete Surfaces;
• D 6237-98, Standard Guide for Painting Inspectors (Concrete and Masonry Substrates);
• D 4228-99, Standard Practice for Qualification of Coating Applicators for Application of Coatings to Steel Surfaces;
• D 3276-00, Standard Guide for Painting Inspectors (Metal Substrates);
• D 5161-04, Standard Guide for Specifying Inspection Requirements for Coating and Lining Work (Metal Substrates); and
• D 4537, Establishing Procedures to Qualify and Certify Personnel Performing Coating Work Inspection in Nuclear Facilities.

Painting and Decorating Contractors of America (PDCA)
PDCA has three specifications that address inspection:

• P2-92, Third Party Inspection Qualification and Responsibilities;
• PDCA P4, 94, Responsibilities for Inspection and Acceptance of Surfaces Prior to Painting and Decorating; and
• PDCA P8-00, Owner’s Responsibility for Maintenance of Paints and/or Coatings.

None of the PDCA documents address the specific division of QC and QA responsibilities.
New Quality Standard from SSPC Supplements the QC Standard

SSPC has prepared SSPC-QS 1, Standard Procedure for Evaluating a Quality Standard of Contractors That Apply Protective Coatings and Linings, for the 2005 SSPC Volume 2, Systems and Specifications. It provides a supplemental standard (QS 1) for use by owners that require a higher level of QC on projects than is addressed in the QP standards. This standard must be specified in addition to the applicable QP standard. QS 1 sets out minimum QC qualifications; requires implementation of a quality system rather than a QC manual; calls for documentation of training of managerial staff and demonstrated management review of fieldwork and QC documentation; recommends that the contractor provide a project-specific work plan defining the inspections, reference standards, and documentation; and requires that results of all inspections and tests be recorded in a written report.

QS 1 also introduces requirements that are not included in the QP standards for contractors, including an annual written review of the QC manual by the QC manager; periodic internal review of QC documentation by the QC manager; and a policy to address the investigation, auditing, and resolution of client complaints.

SSPC Qualification Procedures for Quality Assurance

SSPC has one QP applicable to QA: SSPC-QP 5, “Standard Procedure for Evaluating Qualifications of Coating and Lining Inspection Companies.” The SSPC-QP 5 program establishes a certification for inspection companies whose focus is the industrial coating and lining industry. It evaluates an inspection company’s ability to provide consistent quality inspection of coatings and linings for its clients (typically third-party QA). Like the portions of the SSPC-QP certifications relat-

### Transportation Agencies Addressing QC and QA

A review was conducted of the standard specifications for over 50 transportation authorities as listed in the Federal Highway Administration (FHWA) state transportation websites. Specifications were examined for either QC or QA requirements relative to personnel training/experience, written procedure/quality control manuals, management, inspection hold points, and documentation requirements.

Where QP 1 certification was required by the specification, it was assumed that the minimum QP 1 requirements for the above topics (i.e., training/experience) were invoked.

As shown below, 24 of the over 50 standard specifications reviewed (approximately 50%) contained QC requirements or required QP 1 certification. Fourteen of the 24 specifications relied solely on QP 1 certification. Three of the states required the contractor to complete owner-developed QC forms to document QC inspection of specified hold points. Five of the standard specifications addressed QA requirements. One state required QA to complete an owner-developed form. QA requirements are often handled on a per contract basis rather than through standard specifications.

<table>
<thead>
<tr>
<th>Owner / Specifying Agency</th>
<th>Training / Experience</th>
<th>Written Procedures / Quality Manuals</th>
<th>Authority &amp;/or Management of QC</th>
<th>Inspection Hold Points</th>
<th>Documentation or Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Transportation and Highways (Canada)</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES (Owner Form)</td>
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<tr>
<td>Delaware River Port Authority</td>
<td>QP 1</td>
<td>QP 1</td>
<td>NO</td>
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</tr>
<tr>
<td>Illinois DOT</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES (Owner Form)</td>
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</tr>
<tr>
<td>Ohio DOT</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES (Owner Form)</td>
<td></td>
</tr>
<tr>
<td>Nebraska Department of Roads</td>
<td>YES</td>
<td>NO</td>
<td>NO</td>
<td>YES</td>
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</tr>
<tr>
<td>Maine DOT</td>
<td>QP 1</td>
<td>YES</td>
<td>NO</td>
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</tr>
<tr>
<td>Rhode Island DOT</td>
<td>QP 1</td>
<td>QP 1</td>
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<tr>
<td>New Jersey Highway Authority</td>
<td>QP 1</td>
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<tr>
<td>NJ/NY Port Authority</td>
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<td>QP 1</td>
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<tr>
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<td>YES</td>
<td>NO</td>
<td>YES</td>
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</tr>
</tbody>
</table>

Note: If QP 1 is specified, training and QC manual are assumed.
ed to QC, QP 5 provides minimum requirements for quality assurance personnel, programs, inspections and documentation. The new QS 1 incorporates many QP 5 requirements.

Minimum QA Qualifications: QP 5 requires the company to employ a total quality manager (TQM) who reports directly to management. The TQM must have at least 10 years of experience and be an SSPC PCS or NA CE-Certified Coating Inspector or must hold a BS degree in corrosion science or engineering. Inspectors employed by a QP 5-certified company are divided into three levels of responsibility, based primarily upon experience and education. In addition to coating inspection training, QP 5 requires QA inspectors to undergo annual vision testing and a coating inspection refresher training.

Written Procedures/Quality Manuals: QP 5 requires participants to develop a complete quality system that addresses:
- quality policy and management commitments;
- organizational, management structure, and reporting relationships;
- procedures for performing coating inspections and tests;
- references to inspection equipment, calibration, maintenance, and measurement standards; and
- internal audit procedures and schedule.

The program must be reviewed annually and documented by a written report to management.

Management of QA: QP 5 requires the TQM to audit the QA inspection staff and oversee the implementation of the quality system. In addition, QP 5 requires participants to train auditors and audit the implementation of the quality system.

QP 5 does not define QA hold points or documentation requirements, but states that they are dictated by contract. QP 5 places several additional requirements on QA that are not included in contractor QP programs, such as internal audits, internal review of QA reports, and resolution of client complaints.

Staffing of QC and QA Personnel
The contractor’s schedule, number of work crews or locations, the QC’s other responsibilities, and adequate staffing for QC and QA can also have a significant impact on QC and QA work.

Under the SSPC certification requirements, while the contractor is required to provide a QC representative, there is no guidance on the number of QC personnel or QC time necessary to achieve adequate quality control. For projects involving multiple structures or locations, or multiple crews, it is unlikely that a single QC inspector could perform the necessary observations, testing, and documentation to verify that all the work was performed as required by the project specification or the respective QP standard. If the QC inspector is performing additional duties (e.g., acting as the competent person or assisting in production operations), his or her ability to adequately perform QC is further compromised. None of the QP requirements prevent the QC from performing other functions.

Where there is inadequate QC coverage of the key hold points, the QA inspector may be the only one performing observations and testing. This results in the loss of the primary component (quality control) of the total quality management system. It can also lead to confrontation between the contractor and the QC inspector when non-conformances are observed and the QC inspector was not involved in the initial inspection and correction of the work.

Inadequate QA staffing can also result in inadequate quality auditing of the QC. The level of QA inspection and the number of assigned staff are typically established by the owner based on an engineer’s estimate of the project schedule and contractor’s labor. However, once a contractor has been selected, the contractor typically dictates the schedule, number of work crews, work areas, and working hours. The QA staffing plan should be carefully evaluated against the contractor’s actual schedule to see if adequate QA staff is available.

A nother potential problem with QA staffing is that with shrinking painting budgets, often QA time on-site is limited by the project budget. QA may be limited to an eight-hour workday, while actual contractor operations occur for 12 to 14 hours per day during peak periods. As most of the coating work is performed at the end of the day, a QA inspector may not be on-site during the mixing and application of the coating. A reasonable rule of thumb is that the QC and QA should be present for the complete workday or week.

When QA staffing is inadequate, the ability to observe all operations is compromised. In the absence of effective QC, valuable QA time is lost performing initial inspections.

Separating QC and QA Responsibilities
Qualifications: QC qualifications appear to be inconsistently defined in most of the documents researched. Since QC has the primary responsibility for the quality of the end product, QC personnel should have a minimum level of experience and formal training to perform and document the implementation of the QC process. Consideration should be given to requiring QC personnel to document proficiency in coating inspection through formal certification or successful completion of a specific curriculum.

When SSPC-QP 1 is specified, the experience and training of the proposed QC should be verified.

• Procedures: Similar to the above, the contractor should be required to follow written QC procedures and maintain docu-
mentation for recording the QC observations. Most specifications reviewed did not specify submission of QA procedures. Documentation was required for most QA inspections.

Hold Points: This article suggests that the QC has full-time responsibility for all phases of the project. Further, given the contractor’s control of the equipment, personnel, material, and processes, they must, through QC, be responsible for testing of its operation and adequacy. QA is typically specified at critical hold points and for periodic verification that the QC is being implemented. An appropriate division of hold points between QC and QA is delineated in Table 1 on p. 59.

A proper division of hold point inspections of the QC and QA personnel should result in the ultimate responsibility for quality being that of the contractor, and should allow QA inspectors to fulfill their role as an audit function, rather than as the sole entity responsible for the quality of a coatings project.

Conclusion

Only by establishing clear qualifications, responsibilities, and documentation requirements for both QC and QA on a given project will all parties to a protective coatings project benefit fully from a total quality management process. Benefits can include avoiding duplication of documentation and inspection, reducing conflicts among the contractor, owner, and third party QA; real or perceived under- or over-inspection; and most importantly, long-lasting protection of the structure or asset.

Recommendations

We all can improve our understanding of the functions of quality assurance and quality control.

Owners, for example, should evaluate and revise current standard specifications, special provisions, and contracts (i.e., contractor and owner or third-party inspection) to clearly define the responsibilities of QC and QA personnel.

Owners also should require adequate QC coverage based on projected schedules or minimum QC coverage by crew, structure, location, or working hours.

And owners should require QC personnel to meet minimum standards of training and experience, provide QC procedures, and maintain documentation that will be used to verify the quality of the final product.

Furthermore, when specifying SSPC or similar certifications, owners should require the contractor to provide evidence of QC personnel qualifications and training, necessary QC equipment, QC procedures, and the type of documentation to be completed by the QC inspector. QS 1 should be required in addition to QP certifications.

Owners also should develop QC forms or require the QC to use industry-recognized forms. Similarly, owners should develop QA forms for use by internal QA or third party QA.

Finally, owners should evaluate QA coverage based on the contractor’s proposed work plan, number of crews, locations, or working hours.

Contractors must recognize that QC is the first step in the total quality process and that adequate employee training, experience, and adherence to QC procedures and documentation are crucial. In addition, contractors should provide for adequate level of QC in the project estimate and bids.

Third-party inspection agencies need to clarify in advance with owners and contractors the sequence of QC and QA inspections, how to resolve conflicts, and how to communicate non-conforming conditions.

Third-party inspectors also must verify whether the scope of the inspection is quality control or quality assurance. They must clarify QA inspection hold points versus QC responsibilities.

Trade organizations, such as SSPC, NACE, PDCA, and ASTM, should evaluate the appropriate qualifications/experience, inspection, and documentation specific to QC and QA in their standards. Such organizations should also consider annual retraining, minimum training curriculum or training hours, or certifications for QC personnel.

SSPC should evaluate its certification programs for consistency among the different QP standards. Consideration should be given to defining minimum training requirements for QC and management of the QC process similar to the approach used for QP 5-certified inspection companies. Some of the actions planned for this year appear to indicate that SSPC is moving in this direction.

Though AASHHTO should consider developing master guidelines and specifications relative to the QA and QA on transportation projects.

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