

## Attachment "A"

### Quality Control – Quality Assurance for Traffic Signal Inspectors for ADOT Permits

The Permittee shall employ a full time independent Quality Control Technician(s) (QCT) under the direction of a licensed professional Civil Engineer to oversee the quality control for all Traffic Signal and Lighting work performed under this permit.

Inspection is the act of assuring that requirements in the following categories are met as outlined in the ADOT Construction Manual.

1. Layout
2. Material Properties
3. Dimensions
4. Workmanship
5. Performance
6. Documentation

Examples of each category include but are not limited to:

- Layout: location, elevation, grade, horizontal control and other survey related information;
- Material Properties: type, gradation, strength, compaction, density, grade, certification, stability, prestress, binder content, temperature, cure time, and color;
- Dimensions: spacing, length, width, thickness, height, clearance, slope, diameter, and other shape related information;
- Workmanship: finish, appearance, cure, edge and connection treatments, texture, and handling;
- Performance: smoothness, pressure test, bacteria count, pour rate, flow rate, waterproof, and mortar tight.
- Documentation: Daily Dairies, Certifications of compliance and/or analysis, test reports, material delivery sheets, cut sheets.

Before any permit work begins, a meeting shall take place between QCT, a representative of the Permittee, the contractor working for the Permittee, and the ADOT inspector. At this meeting, the permit plans and specifications shall be fully reviewed and understood before any work is performed in ADOT right-of-way. A copy of the QCT's **resume** and **all certifications** shall be given to the ADOT inspector at the meeting.

Thereafter, whenever any work is performed in ADOT right-of-way under this permit, the QCT(s) shall be present on the job site to coordinate and oversee quality control activities and to perform tests as listed in this permit.

Should any work performed under this permit not meet the specifications and requirements of this permit, the QCT shall have the authority to cause work to cease.

## **Signal QC-QA-2 - Quality Control Technician Qualifications**

The QCT shall have:

- a minimum of six (6) years of experience with quality control inspection or equivalent on electrical construction projects with progressive responsibilities.
  - knowledge and skill in applying and understanding of national and local electric codes.
  - knowledge of specialized tools, equipment and materials related to the trade.
  - knowledge and skill of reading and understanding blueprints, sketches and schematics of electrical and electronic components and circuits.
  - skill in applying electrical and electronic principles, and knowledge of electrical theory.
  - knowledge of methods and procedures for installing, repairing, diagnosing and inspecting traffic signals and illumination devices.
  - have knowledge of safety practices.
  - have skill as a journey level electrician.
  - skill in working outdoors, at considerable heights with power sources up to 7200 volts.
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- The QCT shall be:
  - familiar with the MUTCD Manual on Uniform Traffic Control Devices and the AASHTO Requirements for Structural Supports for Highway Signs, Luminaires and Traffic Signals.
  - familiar with the ADOT Standard Specifications for Road and Bridge Construction.
  - IMSA Work Zone Safety Specialist certified and IMSA Traffic Signal Technician Level 2 certified.
  - Familiar with Traffic Signal and Lighting Standard Drawings and Signing and Marking Standard Drawings.

## **Signal QC-QA -3 – Specific responsibilities and duties of the QCT may include:**

1. Oversee all Traffic Signal construction activities performed in the permit.
2. Assure work is performed according to Permit Requirements, Special Provisions, specifications, plans, *Current edition of Traffic Signals & Lighting Standard Drawings* and *ADOT Standard Specifications for Road and Bridge Construction, 2008 Edition*.
3. Check concrete/concrete slurry delivery tickets to assure mix design and compressive strength meets specifications.
4. Oversee placement of concrete to assure design and specifications are met.
5. Ensure the quality and effectiveness of work products.
6. Ensure Certification of Compliance and/or Certification of Analysis for materials used are received in accordance with Standard Specification 106 and all other applicable Specifications before the work is performed.

7. Assure materials are sampled and tested at the required intervals and in accordance with ADOT Materials Testing Manual. If material fails to meet ADOT specifications, assure material is removed.
8. Assure 28 day concrete test cylinders are taken by an ACI certified inspector for each 50 cubic yards of concrete. If extra test cylinders are needed to allow placement of poles, they shall be taken and concrete strength shall be achieved before poles are placed.
9. Assure concrete test cylinders are stored on site and delivered to the test laboratory according to ACI requirements and test results are given to the ADOT inspector within two (2) working days after test cylinders are broken.
10. Assure that all safety rules are followed.
11. Assure that all work complies with national and local electric codes.
12. Oversee traffic control placed for permit work to assure compliance to approved traffic control plan. If no traffic control plan is approved by ADOT, work shall not be allowed until an approved plan is received from ADOT.
13. Assure work is performed with minimum impact to right-of-way and environment.
14. Provide quality control test results within the time frame specified within this permit.
15. Assure that a letter of compliance for control cabinet is sent to the utility company and that Electrical Notification Forms are filled out and sent to Bill Majors, Mail Drop 013R.

**Signal QC-QA-4 – Responsibilities of the Engineer shall include, but not be limited to the following:**

**The Engineer shall:**

- The Engineer is responsible to assure the permit requirements are followed and to guide the project quality control. If problems arise, the Engineer shall investigate the problems and recommend solutions that follow ADOT design requirements and specifications.
- Once the project is completed according to the requirements of the permit, and before activation of the traffic signal, or release of the contractor from obligations, the Engineer shall contact the ADOT Electrical Inspector or the Area Signal Maintenance Manager for written concurrence. He then shall provide a document to ADOT stating the work performed met all quality control requirements listing all items of work performed. All tests taken shall be given in the document and the document sealed by the engineer.
- Assure Laboratory used to perform testing is accredited by AASHTO and approved by ADOT for tests performed.