Naval Facilities Engineering Systems Command
NAVFAC SOUTHEAST

NAVFAC Southeast
Fire Protection – Quality Control

Industry Day
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Current Challenges

- Currently there is roughly an 80% failure rate on Final Acceptance Testing.
  - Too high, considering there are requirements for pre-testing systems.
  - Also considering that there are requirements for a Fire Protection Quality Control specialist (FPQC).

- In some cases, the FPQC has not been to the construction site until arriving for the Final.
  - This is often the result of the terms for the pre-negotiated sub-contract with the FPQC.

- The Contractor has not sufficiently completed Pre-Final testing to ensure everything is working.

- In some cases, the fire protection systems are not completely installed when arriving for the Final.

What we are finding

- Shop drawings don't match installed conditions.
- The fire alarm system installation is not complete.
- The fire pump test will not meet the manufacturer's bench test curve.
- The base-wide fire reporting system has not been programmed.
- The MNS messages don't work properly.
- Device mounting heights are incorrect.
- The battery calculations are based on device counts and layouts that do not match field conditions.
- The wiring and conduit installation is non-NEC compliant or not in accordance with the RFP/specifications.
- Sub-contractors are unfamiliar with the specifications for that job.
- Shop Drawings have yet to be approved.

Expectations

- Quality Control is the Contractor's responsibility.
- Fire Protection QC (FPQC) is handled by an experienced fire protection engineer.
- The FPQC works seamlessly as part of the QC organization.
- The FPQC inspects work on site, at several critical milestones.
  - There is a "good time" and there is a "bad time" to discover a problem.
  - During the Final Acceptance Testing is generally a "bad time".
- The FPQC will document contract compliance.
  - We have found a direct correlation between the level of documentation and the level of compliance.
- The FPQC attends the Pre-Final and confirms that all systems are functional and ready for Final Acceptance Testing.
  - Failure to hit this milestone is generally a reason for NAVFAC FP to cancel the Final.

Contract Requirements

- RFP Part 3 – Chapter 6 section D40.
- RFP Part 2 – Division 1 Specification (UFGS 01 45 00) section 1.5.8 “Registered Fire Protection Engineer”.
  - This is the Quality Control Specification.
- The Fire Alarm Specification (UFGS 28 31 76) section 3.8 and 3.9.
- The Fire Suppression Specification (UFGS 21 13 13) section 3.7, 3.8, and 3.9.

Clarification of the FPQC Role

- Division 1 specifications - Section 01 45 00 (Quality Control).
- Paragraph 1.5.8 “Registered Fire Protection Engineer”.
- New edits add details describe the “who, what, where, when and how” for FPQC oversight.
- We are finding that the Prime Contractor’s agreement with the FPQC is sometimes limited to as little as one site visit, and that is just at the Final.
  - Based on the previous slides, this is a “recipe for disaster”.
  - This clearly negates the benefits intended when requiring an FPQC.
- Major items being addressed in the updated requirements are;

  - What the FPQC needs to inspect.
  - When the FPQC needs to inspect those items.
  - Documentation of findings.
  - Relationship to the Prime Contractor.

FPQC Qualifications

- Licensed FPE.
- 5 years experience.
- First tier sub-contractor.
- Single source.
- No other business relationships with the prime or other sub-contractors.
  - Most of these requirements are not new.
  - Contractors have generally not had a problem meeting these requirements.
  - Its of great interest and benefit to the Contractor to choose a good FPQC.

FPQC Roles/Responsibilities

- The FPQC is a member of the QC organization.
- The FPQC will review each fire protection submittal before forwarding to the Government for review.
- Construction Surveillance is required at several identified milestones.
- The FPQC will witness Pre-Final testing and confirm results in writing.
- Attend the Final.
  - This really facilitates continuity between the Pre-Final and the Final.
  - This provides a knowledgeable point of contact for the NAVFAC FPE to discuss technical issues at the Final.
- Documentation required for each inspection event as well as certification of the Pre-Final results.

Construction Surveillance

- Underground piping, fittings and restraints, hydrostatic/leak test, and flushing.
- Fire pump startup.
- Inspection of the fire alarm before close-in.
- Inspection of the sprinkler system before close-in.
- Inspect fire stopping, wall construction, and dampers before close-in.

Pre-Final

- Witnessed by the FPQC.
- Inspect the installation of all systems.
- Witness all testing.
- Review record of completion forms.
- Confirm rework has been completed.
- Report in writing that all pre-final tests and inspections are successfully completed.
- Then the QC Manager can request a Final with the Government.

Expectations for the Final

- FPQC has provided a written report indicating that all systems have been tested and are complete and ready for Final.
- The FPQC shall sign and stamp the report.
- All record of completion forms.
- Fire alarm panel clear of all supervisory, trouble, and alarms.
- Fire alarm signal transmission to the RDC has been programmed and tested.
- All work on the fire alarm and suppression systems are complete.

The End-Goal

- Only minor punch-list items on the Final.
- Problems with workmanship have been corrected.
- Audibility and intelligibility testing is successful.
- Fire pump is online.
- Sprinkler and fire alarm are online.
- Systems report to the RDC.
- No other programming or installation is needed.