

Quality Assurance Walkthrough

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1. Purpose

The goal of this Quality Assurance Walkthrough (QAW) procedure is to identify and promptly address any issues or potential problems in the solar system, to enhance customer satisfaction, increase internal workflow productivity, and streamline Solar Gain's operations, ultimately promoting our reputation as a reliable and efficient company.

This document serves as a complete guide for executing a QAW. It outlines the roles and responsibilities of team members, required materials, and the chronological steps involved. It is designed to provide comprehensive guidance and answer questions related to the QAW process.

2. Responsibilities

These defined roles and responsibilities ensure consistency and transparency in the QAW process, enabling team members to understand their contributions and minimizing confusion and/or misunderstandings.

The following roles execute the QAW and have these primary responsibilities:

- Project Manager (PM):
 - Order QAW after commissioning.
 - Provide necessary documentation and access to the system for the QAW.
 - Review and schedule remediation based on the identified issues.
- Quality Coordinator (QC):
 - Schedule the QAW in coordination with the PM and the Technician
 - Ensure that the QAW is conducted according to the established procedures.
- Technician (Tech):
 - Perform the QAW according to the established guidelines outlined in section 3.
 - Fix urgent issues as described in section 3.2.
 - Document findings and observations during the QAW.
 - Report findings to the management team.

3. Procedure and Work Instructions

1. Pre-Walkthrough

Managers prepare documents, scheduling, and equipment needed by Tech. The Tech is prepared for QAW and informed of the scope of the inspection, focus items, and has a working knowledge of equipment and materials on site.

- 1) Upon commissioning, the PM orders a QAW. The PM informs the QC and provides necessary details to the QC.
 - a) Location/Job name
 - b) Customer contact info
 - c) Scope of inspection: PM determined based on whether the ongoing QA process has been upheld.
 - i) Comprehensive level verification: Ongoing Quality Assurance (QA) process has not been maintained and there is a lack of QA for the system.
 - ii) Basic level verification: Ongoing QA process has been maintained throughout system installation.
- 2) The PM assembles documents into handoff package and provides handoff package to QC.
 - a) As-built plan set (most current plan set may be used when as-built is unavailable)
 - b) List of focus items generated by PM.
 - c) Relevant QA records from construction
- 3) The QC will:
 - a) Schedule the QAW:
 - i) Customer: Inform the customer if QAW is performed outside of scheduled site fieldwork.
 - ii) Inform Tech team responsible for QAW.
 - iii) Inform PM of pending QAW timeline.
 - b) Complete handoff package
 - i) Receive documents from PM.
 - ii) Confirm contents of as-built.
 - iii) Clarify list of focus items provided by PM.
 - iv) Add QAW checklist to handoff package.

- c) Review QAW details and handoff package with Tech prior to walkthrough.
 - i) Confirm all documents are prepared.
 - ii) Confirm tech understands special instructions for focus items.
 - iii) Confirm scope of QAW as determined by PM.
 - iv) Confirm and authorize any equipment needed by Tech.

2. Walkthrough

QC informs Tech of QAW requirements. QC provides handoff review and package. Tech performs the QAW and reports findings to the management team.

The Technician's objective is to identify workmanship issues, record them, and report them.

Urgent issues that could cause harm to personnel, property, or result in significant costs if left unaddressed will be fixed immediately to stop any future damage.

The Technician is not responsible for fixing minor or common issues or non-urgent items during the QAW.

- 1) Tech verifies contents of handoff package before departure from office.
 - a) Tech addresses any questions before scheduled QAW.
 - b) Tech confirms that they have working knowledge of on-site equipment and materials.
- 2) Tech performs QAW
- 3) Tech follows these guidelines during their walkthrough.
 - a) Identify scope of inspection on QAW checklist.
 - b) Approach QAW scope based on PM determination.
 - i) Comprehensive level inspection: Detailed inspection of devices and components that hold warranties. This inspection will be a device-by-device inspection that includes: UL Listing verification, as-built verification, and device confirmation of conforming to installation manual specifications.
 - ii) Basic level inspection: Basic inspection that continues the ongoing QA process.
 - c) Verify installation matches design as-built.
 - d) Look for examples of workmanship best practices.
 - e) Look for workmanship failures.
 - f) Identify and record reliability issues and customer complaints to improve future projects.
 - g) Look for and identify issues that fail SG quality standards.
 - h) Take photos of all issues.
 - i) Identify and mark issues on the as-built.

- i) Map markings should be clear and easily visible.
- j) Mark/flag or otherwise physically indicate location of issues along with photos.
 - i) Markings should be easily visible for team members, but discreet for customers.
- k) Complete QAW checklist on site with supporting photos.
 - i) Complete remediation punch list alongside QAW checklist.
 - ii) Rate remediation items by severity.
 - (1) Localized, one-off issue
 - (2) Site wide, every instance where item could occur should be inspected and addressed.
- 4) Tech fixes urgent issues on site if repair is possible with on-site equipment.
 - a) Urgent means issues that could cause harm to personnel, property, or result in significant costs if left unaddressed. Any issue that can be seen as a legal liability falls into urgent.
- 5) Within 48 hours of completing QAW, tech will:
 - a) Upload photos to the drive.
 - b) Distribute Site Capture report to project team.

3. Post Walkthrough

QAW report and photos are reviewed, and a remediation plan and schedule are created.

Issues identified during the QAW are addressed and resolved in a timely manner. The following steps should be taken:

- 1) Data collection and analysis
 - a) The QC compiles data collected during the QAW and determines the overall quality of the project.
 - b) Identify trends, recurring issues, and potential areas for improvement.
- 2) Issue resolution
 - a) Team develops and implements action plan for identified issues.
 - b) Promptly address identified issues as per action plan.
- 3) Documentation
 - a) Document all findings and actions taken in the project's QA records for future reference.

- 4) Follow-up
 - a) The QC orders follow-up inspection and confirms all issues have been resolved and meet SG quality standards.
- 5) Continuous Improvement
 - a) Review QAW process periodically to identify improvement and that it meets SG quality standards.

4. Definitions and Acronyms

Definitions:

- **Pre-Walkthrough:** The initial stage of the QAW process where managers prepare documentation, scheduling, and equipment needed by technicians.
- **Scope of inspection:** Refers to the level of inspection that will be conducted during the QAW. It is determined by the project manager based on the difficulties encountered during construction.
- **Focus items:** Items that require special attention or inspection during the QAW.
- **As-Built plan set:** A set of plans that documents the final built structure or system as it exists in the field.
- **Handoff package:** A set of documents that are provided to the Quality Coordinator by the Project Manager, which includes the as-built plan set, a list of focus items generated by the PM, and relevant QA records from construction.
- **Operations PM:** Refers to the Project Manager responsible for the overall operations of the project.
- **Commissioning:** The process of ensuring that all systems and components of a building or facility are designed, installed, tested, operated, and maintained according to the owner's requirements and specifications.
- **Manufacturer level verification:** A level of inspection that requires a more thorough examination of the project when little to no past company time has been spent on quality assurance.
- **Basic level:** A level of inspection that requires less thorough examination of the project when some company time has been spent on quality assurance throughout the project.
- **Workmanship best practices:** A set of guidelines and standards that define the expected level of quality in the construction or production process. These practices ensure that work is completed to the highest possible standards and meets all relevant regulatory requirements.
- **Workmanship failures:** Instances where work is not completed to the required standard or does not meet the expected level of quality. These can include defects, errors, and omissions that impact the function, safety, or longevity of the product or structure being produced.

- **Issues (in the context of this SOP):** Any problem or concern that arises during the Quality Assurance Walkthrough (QAW) process. This can include issues related to workmanship failures, equipment or material deficiencies, or other factors that may impact the overall quality of the project. Issues may need to be documented, tracked, and addressed in order to ensure that the final product meets all relevant quality standards.
- **UL Listing verification:** Electrical code compliance on the material level. UL Listing compliance represents equipment and materials that are verified to work with each other.

Acronyms:

- **QAW:** Quality Assurance Walkthrough
- **PM:** Project Manager
- **QC:** Quality Coordinator
- **QA:** Quality Assurance
- **QC:** Quality Control

5. Appendices and Documentation

1. QAW checklist: A comprehensive checklist that covers all line items of the QAW. Attached.
2. List of focus items: a list provided by PM that details QA concerns identified throughout ongoing QA inspections during system installation. No standardized form, typically an email.
3. Remediation Punchlist: A list provided by PM of explicit ongoing issues to QA. No standardized form, typically an email.
4. Past records: Recorded in the google drive.
 1. Inspection reports
 2. Calibration logs
 3. Incident reports.
5. SOP-QC-003 Quality Process: A document that outlines the overall quality assurance approach for projects, outlining SG quality standards. *To be attached.*
6. Example handoff package: An example assembled handoff package for reference. *To be attached.*

6. *Revision History*

1. Version 1 – May 2023:
 2. Primary contributor: Andrew Wible | Safety Manager
 3. Writer: Rio Astiz
 4. Approval Date: May 2023
 5. Approved by: Andrew Wible
 6. Changes
 7. Finalized Document