

[CompanyName]

Roofing Construction

Quality Assurance/Quality Control Plan

[ProjectName]

[ProjectNumber]

Management acceptance

This Roofing Construction Quality Assurance/Quality Control Plan has been reviewed and accepted.

Endorsed By: (Name / Title)	[QualityManagerName], Quality Manager		
Signature:	<i>[QualityManagerName]</i>	Date:	[Date]
Version	1.0	Notes	Initial Issue

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PROJECT-SPECIFIC ROOFING CONSTRUCTION QUALITY PLAN

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J. ROOFING CONSTRUCTION PROJECT QUALITY SPECIFICATIONS

[CompanyName] personnel and subcontractors and suppliers are accountable for compliance to standards-based written specifications.

To achieve expectations reliably and consistently, specifications are clearly spelled out, not only for results but also for processes. Specifications apply to materials, work steps, qualified personnel and subcontractors and suppliers, safe work rules, and environmental work conditions.

Standards ensure that results are specified rather than left to discretionary practices.

REGULATORY CODES

All [CompanyName] activities comply with the relevant regulations. The Quality Manager identifies regulatory requirements applicable to the jurisdictions served, including:

- Applicable Federal regulations
- Applicable State regulations
- Applicable building codes and local addenda to building codes
- Applicable Fire Code
- Additional regulations specified by the purchaser contract

The Quality Manager identifies regulatory requirements that apply to a specific project. The Superintendent had jobsite access to relevant codes and government regulations.

MATERIAL SPECIFICATIONS

The Quality Manager ensures that all types of materials and equipment that affect quality are identified and controlled.

The Quality Manager evaluates the expected use of materials and equipment and identifies types of materials and equipment that may affect project quality. For each item, the Quality Manager sets specifications for their intended use, including:

- Compliance to contract requirements
- Compliance to code and industry standards and listing requirements
- Structural integrity
- Performance
- Durability
- Appearance
- Product identification for traceability.

The Quality Manager identifies controlled material and equipment that apply to the project. Only approved materials are used in the construction process.

EQUIPMENT SPECIFICATIONS

The selection and use of equipment are controlled to assure the use of only correct and acceptable equipment on the project.

The Quality Manager determines specifications of required equipment that affect quality and the specifications of quality-controlled equipment.

When equipment is received, the Superintendent verifies that equipment is as specified.

WORK PROCESS SPECIFICATIONS

The Quality Manager ensures that work processes are controlled to ensure that the specified requirements are met. When appropriate, the Quality Manager will specify project quality standards for work processes that may include:

- References to documented procedures such as manufacturer's installation instructions
- Procedures for carrying out process steps
- Methods to monitor and control processes and characteristics
- Acceptability criteria for workmanship
- Tools, techniques and methods to be used to achieve the specified requirements.

[COMPANYNAME] QUALITY STANDARDS

All [CompanyName] activities comply with generally accepted good workmanship practices and industry standards.

The Quality Manager identifies supplemental requirements for industry standards that apply to a specific project when it is not otherwise specified by the contract, contract technical specifications, or approved drawings.

[CompanyName] quality standards supplement contract requirements when they are necessary to ensure quality.

When [CompanyName] quality standards differ from industry standards or product manufacturer instructions, the Quality Manager justifies that the standard reliably achieves quality results and then documents the justification.

All [CompanyName] activities conform to the company quality standards.

INDUSTRY ROOFING STANDARDS

Codes that may apply to this project include those listed below.

Codes that may apply to this project include those listed below.

Description	Reference Standard No.	Reference Standard Title
Use of coal-tar pitch materials	29 CFR 1926	Safety and Health Regulations for Construction
Minimum clearance around masonry chimneys or masonry enclosing a flue	NFPA 211	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
Minimum clearance around vents and vent connectors	NFPA 211	Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances
Applying roofing materials to steep-slope roofs	NRCA 0418	Steep-slope Roof System Manual

Fabrication of flashing and trim	SMACNA 1793	Architectural Sheet Metal Manual
Anchoring metal roof panels	NRCA 0409	Architectural Sheet Metal and Metal Roofing Manual
Anchoring metal wall panels	MBMA MBSM	Metal Building Systems Manual
Installation of roof membrane systems	NRCA 0405	Roofing and Waterproofing Manual

APPLICATION OF MULTIPLE SOURCES OF SPECIFICATIONS

Should multiple sources of specifications apply to a work task, the higher level of specification applies. When there are equal levels of specifications that conflict, the specifications are applied in this order:

- Submittals approved by the purchaser
- Contract technical specifications
- Contract drawings
- Government regulations that exceed requirements of items below
- [CompanyName] quality specifications, including subcontract specifications
- [CompanyName] Quality Manual
- Product installation instructions
- Industry standards
- Generally accepted practices

Selected Pages
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K. MATERIAL INSPECTION TRACEABILITY AND QUALITY CONTROLS

Products and materials are controlled to assure the use of only correct and acceptable items. Controls include identification of the inspection status. Materials that require lot control traceability and the method of traceability are listed on the Controlled Materials form included as an exhibit in this subsection.

IDENTIFICATION OF LOT CONTROLLED MATERIALS

The Quality Manager determines types of project materials that require quality controls.

For each type of quality-controlled material, the Quality Manager determines lot control traceability requirements, if any, and specifies the means of lot identification. Identification methods may include physical labels, tags, markings and/or attached certification documents.

When lot-controlled materials are received, the Superintendent verifies that materials have the specified lot identifications.

The Superintendent maintains lot identification at all production phases from receipt, through production, installation, or assembly, to final completion. Acceptable methods for preserving lot identification include physically preserving observable lot identifications, recording the lot identification on a work task quality inspection form or other work record, or collecting the physical lot identifier as a record along with supplemented with location.

If lot-controlled materials are without lot identification, the Superintendent deems the materials as nonconforming and segregates them and/or clearly marks them to prevent inadvertent use. The Superintendent treats the material according to the company policy for nonconformances. Only the Quality Manager can re-identify or re-certify the materials.

MATERIAL RECEIVING AND INSPECTION

When lot-controlled materials are received, the Operations Manager inspects the materials and verifies that materials have the specified lot identifications. Received materials are listed on the Material Receiving and Inspection Report form included as an exhibit in this subsection.

Material quality inspections and tests ensure that purchased materials meet purchase contract quantity and quality requirements. The Superintendent inspects or ensures that a qualified inspector inspects materials prior to use for conformance to project quality requirements.

The Superintendent ensures that each work task that uses the source inspected materials proceed only after the material has been accepted by the material quality inspection or test.

EQUIPMENT INSPECTIONS

All equipment is inspected and maintained daily or prior to use based on manufacturer's instructions. This includes all equipment whether in use or not while on the jobsite.

The Superintendent ensures that each work task that uses equipment proceed only after the equipment has been accepted by the equipment quality inspection or test.

The equipment inspection includes a verification of the following:

- Equipment is in good working condition and that there is no need for repair
- Equipment maintenance has been performed to meet manufacturer's specifications
- Equipment is safe to use

PRESERVATION AND PROTECTION OF MATERIALS AND COMPLETED WORK

[CompanyName] will preserve and protect work in process, completed work, component parts, materials, and when applicable, delivery to the destination to maintain compliance with project requirements and standards. This includes handling, storage, protection from natural elements, and reducing risks of damage.

Completed work is protected from damage as specified by government regulations, contract technical specifications, industry standards, or product installation instructions.

The Quality Manager identifies supplemental protection requirements that apply to a specific project when they are necessary to assure quality results.

MATERIAL AND EQUIPMENT STORAGE

The Superintendent ensures all materials and equipment will be delivered, stored, handled and maintained in a manner that protects them from damage, moisture, dirt and intrusion of foreign materials.

Delivery of materials and equipment will be planned according to the work progress to minimize storage on site, where there are higher possibilities of damages and deterioration of materials.

Preventive maintenance based on the manufacturer's recommendations will be performed on all stored materials and equipment if required.

If preventive maintenance is required:

- The Superintendent or qualified receiving inspector will record the item(s) on the Material and Equipment Receiving Inspection form and note that preventive maintenance is required
- Tag or label the material / equipment
- Record, on the tag or label, the type of preventive maintenance required, how often preventive maintenance is to be performed, and the date it was performed

Stored materials will be segregated to prevent cross contamination and limit losses should a delivery be rejected.

The Superintendent surveys stored materials and equipment during daily jobsite reviews to verify preventive maintenance requirements are being performed as required, and to identify if any material any material and/or equipment that have incurred damage or otherwise become defective and therefore unfit for use.

MEASURING AND TEST EQUIPMENT CONTROL AND CALIBRATION

The Quality Manager evaluates the project requirements and determines if there are measuring and test equipment that require controls to assure quality results.

For each type of device, the Quality Manager identifies:

- Restrictions for selection
- Limitations on use.
- Calibration requirements including the frequency of calibration. All calibrations must be traceable to national measurement standards.

UTILIZATION OF MEASURING AND TEST EQUIPMENT

Measuring and testing equipment utilized will be appropriate to the work performed and in good repair and working condition. At prescribed intervals, or prior to each use, all MTE and devices used for inspection or testing shall be calibrated and adjusted against certified equipment having a known valid relationship to nationally recognized standards. When no national standards exist, the basis employed for calibration shall be documented. The Quality Manager shall:

- Identify MTE and provide a tag, sticker, or other suitable means to show the calibration status.
- Maintain calibration records and maintain traceability of calibrated equipment. Calibration documentation shall provide traceability by demonstrating an unbroken chain of calibration or comparisons linking them to relevant national standards or physical constants.

MTE that will be controlled, calibrated, and maintained is listed on a Test Equipment Calibration Plan and Log form included in the Forms section at the end of the manual.

If MTE is found to be out of calibration, the equipment and the tests performed with the out-of-calibration equipment shall be evaluated. The equipment shall be tagged and segregated (if space permits) and shall not be used until it has been calibrated, repaired, and found acceptable for use. If it cannot be repaired, the equipment shall be properly dispositioned. If the results of the testing performed with the equipment are not valid, a nonconformance shall be written.

Calibration and control measures are not required for commercial equipment such as rulers, tape measures, and if such equipment is not used for Quality Control or quality verification purposes and provides the required accuracy.

[CompanyName] Material Inspection and Receiving Report								
Contract ID	Contract Name	Purchase Order No.	Supplier			Bill of Lading No.	Date	
[ProjectNumber]	[ProjectName]							
Item No.	Stock/Part No.	Description	Quantity Received	Condition	Marking	Accept	Conditional Use	Reject
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Receiving Quality Control								
<p>ACCEPTANCE</p> <p>Listed items have been accepted by me or under my supervision</p> <p><input type="checkbox"/> Conform to contract specifications EXCEPT as noted herein or on supporting documents.</p> <p><input type="checkbox"/> Received in apparent good condition EXCEPT as noted</p> <p>Signature of authorized person and date: _____</p>								
EXCEPTIONS:								

**[CompanyName]
Test Equipment Calibration Plan and Log**

Project ID	Project Name	Preparer	Date
[ProjectNumber]	[ProjectName]		

Type of measuring device	Calibration Type and Frequency	Measuring Device ID	Calibrated By/ Calibration Date	Calibration certificate #	Next Calibration Due Date
					Project Start

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L. ROOFING CONSTRUCTION INSPECTION AND TEST PLAN

The Quality Manager prepares quality inspection and test plans for a project that identifies:

- Each required quality inspection and/or test
- Inspection and test specifications for each required quality inspection or test
- Hold points for purchaser quality inspection
- Specification requirements for each quality inspection and test

The Quality Inspection and Test Plan form lists inspections and tests (other than work task inspections) that will be performed on this project.

Results of inspections and tests will be recorded on the Inspection and Test Form. An Inspection and Test Plan and Log form exhibit is included as an exhibit in this subsection.

INDEPENDENT MEASUREMENT AND TESTS

The Quality Manager ensures that quality tests that apply to a specific project are clearly identified. Tests for a project include:

- Purchaser required quality tests as specified by the contract, contract technical specifications, contract drawings, and approved submittals.
- Additional quality tests necessary to assure quality results.

HOLD POINTS FOR PURCHASER INSPECTION

The Superintendent stops work when reaching a hold point specified on the inspection and test plan. The Superintendent ensures that work proceeds only with purchaser approval.

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**[CompanyName]
Inspection and Test Plan and Log**

Project Number	Project Name	
[ProjectNumber]	[ProjectName]	(All tests verified by Superintendent and/or QC Manager)

Item	Spec Section Number and Title	Applicable Standard	Inspections & Tests Description	Test and Inspection Methods	Number required	Time Schedule/Frequency	Inspection/Test By	Sample Req. Yes/No	Unique characteristics of QC Service
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									

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Questions? Call First Time Quality 410-451-8006

List of Included Forms

Standard Forms:

- Point Of Contact List
- Project Organization Chart
- Project Quality Communications Plan
- Quality Manager Appointment Letter
- Project Manager Appointment Letter
- Superintendent Appointment Letter
- Personnel Certifications and Licenses
- Project Personnel Resumes
- Project Subcontractor and Supplier List
- Training Plan
- Training Log
- Regulatory Codes and Industry Standards
- Project Regulatory Building Codes
- Controlled Materials Form
- Metals Material Receiving Inspection Report
- Material Inspection and Receiving Report
- Inspection and Testing Standards
- Quality Inspection and Test Plan
- Test Equipment Calibration Plan and Log
- Quality Controlled Work Task List
- Daily Production Report
- Work Task Inspection Form
- Nonconformance Report
- Punch List
- Project Completion Inspection Form
- System Document Control Form
- Project Records Control Form
- Project Quality System Audit Form

ROOFING INSPECTION CHECKLIST

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Thermal and Moisture Protection - Flashing and Sheet Metal 07.60.00

Thermal and Moisture Protection - Joint Protection 07.90.00

Thermal and Moisture Protection - Membrane Roofing 07.50.00

Thermal and Moisture Protection - Roof Accessories 07.72.00

Thermal and Moisture Protection - Roof and Deck Insulation 07.22.00

Thermal and Moisture Protection - Roof Panels 07.41.00

Thermal and Moisture Protection - Roof Tiles 07.32.00

Thermal and Moisture Protection - Roofing and Siding Panels 07.40.00

Thermal and Moisture Protection - Sheet Metal Roofing 07.61.00

Thermal and Moisture Protection - Shingles and Shakes 07.31.00

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Thermal and Moisture Protection - Membrane Roofing 07.50.00

Project:	Phase:	Contract#:	Subcontractor:	Crew:
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<u>Compliance Verification</u>	<u>YES</u>	<u>NO</u>	<u>Heightened Awareness Checkpoints</u>
<input type="checkbox"/> Compliance with initial job-ready requirements	<input type="checkbox"/>	<input type="checkbox"/>	Type and mfr: per plans and specifications
<input type="checkbox"/> Compliance with material inspection and tests	<input type="checkbox"/>	<input type="checkbox"/>	Underlayment layout/ fasteners and laps: per plans; damage free
<input type="checkbox"/> Compliance with work in process first article inspection requirements	<input type="checkbox"/>	<input type="checkbox"/>	Rubber/plastic: sheet size and layout per plans
<input type="checkbox"/> Compliance with work in process inspection requirements	<input type="checkbox"/>	<input type="checkbox"/>	Bitumen/asphalt: Correct number of plies and coating thickness
<input type="checkbox"/> Compliance with Task completion inspection requirements	<input type="checkbox"/>	<input type="checkbox"/>	Proper drainage and slopes; no ponding
<input type="checkbox"/> Compliance with inspection and test plan	<input type="checkbox"/>	<input type="checkbox"/>	Scuppers and drains: well-sealed/ locations per plans
<input type="checkbox"/> Compliance with safety policies and procedures	<input type="checkbox"/>	<input type="checkbox"/>	Flashings and wall caps: cover roofing; sealed per specifications
Reported Nonconformances and incomplete items	<input type="checkbox"/>	<input type="checkbox"/>	Parapet walls and curbs: laps and seals per specifications
	<input type="checkbox"/>	<input type="checkbox"/>	Joint seals: rubber and plastic roofing; per exact mfr's method
	<input type="checkbox"/>	<input type="checkbox"/>	Aggregates: size/ type and depth. uniformly spread
	<input type="checkbox"/>	<input type="checkbox"/>	Expansion joints/ installed per specification/ damage free and functional

Scores and Completion Sign-off

Field Mgmt.-91.45.01

Quality 5 4 3 2 1 *Notes:*

On-Time 5 4 3 2 1 *Notes:*

Safety 5 4 3 2 1 *Notes:*

Sign and date*: Cell # / ID #: _____ Signed: _____ Date: _____

Task has been verified complete and in compliance with contract drawings and specifications except for non-conformances and incomplete items reported above.

<u>Quality Score</u>	5 = 100% NO problems	4 = 1 minor problem	3 = Hotspot or 2-3 minor	2 = 6+ or major problems	1 = Excessive problems
<u>On-Time Score</u>	5 = On Time	4 = Late	3 = Late by 1 day	2 = Late by 2 days	1 = Late more than 2 days
<u>Safety Score</u>	5 = 100% NO problems	4 = 1 minor problem	3 = Hotspot or 2-3 minor	2 = 4+ or major problem	1 = Injury

Questions? Call First Time Quality 410-451-8006



For More Information:

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