FHWA-DOT Comprehensive Quality Plan & Manual Sample

Selected pages (not a complete plan or manual)

Sample includes:

- ✓ Project Quality Plan Pages
- ✓ Quality Manual Pages
- ✓ Submittal Forms Examples

Contact:
First Time Quality
410-451-8006

www.firsttimequalityplans.com

[CompanyName]

Construction

Quality Assurance/Quality Control Plan

[ProjectName]
[ProjectNumber]

Management acceptance

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

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

SIGNATURE SHEET

Plan Preparer

This [CompanyName] Project Quality Control Plan was prepared in accordance with the contract specifications and requirements of the [CompanyName] quality system and approved by:

[QualityManagerName] / [Date]

[QualityManagerName], Quality Manager /Date

Approval by Company Officer

This [CompanyName] Project Quality Control Plan is approved by:

[SeniorManagerName] / [Date]

[SeniorManagerName] Senior Manager /Date

Plan Concurrence

[CompanyName] Project Quality Control Plan concurrence by:

[ProjectManagerName] / [Date]

[ProjectManagerName], Project Manager /Date

[SuperintendentName] / [Date]

[SuperintendentName], Superintendent /Date

QUALITY ASSURANCE/QUALITY CONTROL PLAN

TABLE OF CONTENTS

BACKGROUND INFORMATION

CUSTOMER

[CustomerName]

PROJECT NAME

[ProjectName]

PROJECT NUMBER

[ProjectNumber]

PROJECT LOCATION

[Insert Location of Project Work Here]

OVERALL PROJECT DESCRIPTION

[Insert Overall Project Description Here]

[COMPANYNAME] SCOPE OF WORK

[Insert Scope of Work for This Contract Here]

C. QUALITY CONTROL PLANS

Project phases of work and Tasks subject to process control procedures are listed on the Quality Controlled Tasks form. The form is included as an exhibit in this subsection.

A series of inspections will be performed on each Task including

- Tests specified by contract requirements
- Material inspections
- Task Job-ready inspections
- Work in process inspections
- Task Completion inspections

Near project completion [CompanyName] performs a punch-out QC inspection, corrects all deficiencies. If the customer performs a final inspection, [CompanyName] corrects all deficiencies. The customer may verify completion of the project by a final acceptance inspection.

LISTING OF QUALITY CONTROLLED CONSTRUCTION TASKS

A listing of project Tasks is included on the Quality Control Task List is included as an exhibit in this subsection.

The Quality Manager identifies each phase of construction Task that requires separate quality controls. Each Task triggers a set of requirements for quality control inspections before, during and after Tasks.

Specifically, Task that required for the following Tasks listed on the Master Tasks form included as an exhibit in this subsection.

Additional detail on [CompanyName] policies and procedures for the preparation of the Task appear in Quality Manual section 2.5 Identification of Quality Controlled Task.

TASK QUALITY CONTROL PLANS

A quality control plan is prepared for each quality-controlled Task. Each Quality Control Plan is recorded on DOT Form 470 and included as exhibits in this subsection.

Specifically, the quality control plans include descriptions of the following QC activities:

- Preparatory QC Activity 1. Independently and with contractor staff review contract requirements plans and specifications.
- Preparatory QC Activity 2. Check and verify submittals, plans and materials certifications for contract requirements and submit to FHWA Provide statement and signature of verification.
- Preparatory QC Activity 3. Check site conditions for constructability, including staging, disposal and storage areas. Identify potential quality control issues. Verify the materials delivered to the site conform to accepted materials certifications, submittals, plans and contract requirements.
- Preparatory QC Activity 4. Review construction staking to assure accuracy and sufficiency at each stage of construction.
- Preparatory QC Activity 5. Complete operational work plan. Provide brief written narrative of the work activity describing methods, locations, crews, equipment and processes that will be used to complete the work.
- Start Up QC Activity 6. Conduct pre-work meeting. Review contract requirements jointly with construction crew, foremen and FHWA personnel prior to beginning work.

- Production QC Activity 7. Verify that the ongoing construction will result in the end product meeting the contract requirements. Verify by inspecting, measuring and testing.
- Production QC Activity 8. Provide immediate presence to communicate status of work to FHWA personnel and contractor personnel for quality control issue resolution.
- Completion QC Activity 9. Verify completed work meets contract requirements. Implement form WFLHD 470 Notification of Completion of Work as required.

Work on a quality-controlled Task will not begin until the quality control plan is approved by the customer.

PROCESS CONTROL COORDINATION AND COMMUNICATION

PROJECT STARTUP MEETING

Prior to the commencement of work, the Project Manager holds a meeting to discuss and coordinate how project work will be performed and controlled. Key personnel from [CompanyName], subcontractors and suppliers meet to review expectations for project quality results as well as quality assurance and quality control policies and procedures including:

- Key requirements of the project
- The Project Quality Assurance/Quality Control Plan
- Required quality inspections and tests
- The project submittal schedule
- Quality policies and heightened awareness of critical quality requirements
- Project organization chart and job responsibilities
- Methods of communication and contact information
- Location of project documents and records

WEEKLY MEETINGS

The Superintendent conducts a meeting with key company, subcontractor and supplier personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

The meeting is held on a nominal weekly schedule. During the meeting, the Superintendent facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Superintendent maintains a record of the meeting event on the Daily Quality Control Report.

Additional detail on [CompanyName] policies and procedures for process controls appear in Quality Manual section 7 Process Controls.

TASK REQUIREMENTS REVIEW

In preparation for the start of an upcoming Task, the Superintendent reviews an integrated and coordinated set of documents that collectively define quality requirements for the Task including:

- Objectives and acceptance criteria of the Task
- Quality standards that apply to the Task
- Work instructions, process steps, and product installation instructions that apply to the Task
- Shop drawings
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work

- Required records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements
- Required quality inspections and tests
- Method for clearly marking nonconformances to prevent inadvertent use
- Location of quality system records and documents
- Personnel training

DAILY QUALITY CONTROL INSPECTIONS

The Superintendent records a summary of daily work activities. The report will include:

- Schedule Activities Completed
- General description of work activities in progress.
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Supplier and Company Crews on site
- Visitors and purpose
- General Remarks
- Improvement Ideas
- Weather conditions

Specific daily inspections and measurements will be provided as listed in Table 153-2, included as an exhibit in as an attachment to this Quality Assurance/Quality Control Plan. Results will be recorded on the Daily Quality Control Report.

Additional detail on [CompanyName] policies and procedures for the preparation of the test plan appears in Quality Manual section 7.6 Daily Quality Control Report.

PHASE 1: PREPARATORY PHASE

Phase 1 is the Preparatory Phase that plans quality for an upcoming Task. It includes a requirements review, site inspection, and a preparatory meeting. Records of the preparatory phase of control are recorded on the Preparatory Phase Checklist included as exhibits in this subsection.

Procedures that will be used on this project to conduct the Phase I preparatory phase of control are as follows.

PREPARATORY PROJECT QUALITY CONTROL PLANNING

In preparation for the start of an upcoming Task, the Superintendent reviews an integrated and coordinated set of documents that collectively define quality requirements for the Task including:

- Objectives and acceptance criteria of the Task
- Quality standards that apply to the Task
- Work instructions, process steps, and product installation instructions that apply to the Task
- Shop drawings
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work
- Required records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements

- Required quality inspections and tests
- Method for clearly marking nonconformances to prevent inadvertent use
- Location of quality system records and documents
- Personnel training

PREPARATORY SITE INSPECTION

The Superintendent also performs a quality inspection of the work area and:

- Assesses completion of required prior work
- Verifies field measurements
- Assures availability and receiving quality inspection status of required materials
- Identifies any nonconformances to the requirements for the Task to begin
- Identifies potential problems

Specifically, the preparatory site inspection will include:

- Check site conditions for constructability, including staging, disposal and storage areas. Identify potential quality control issues. Verify the materials delivered to the site conform to accepted materials certifications, submittals, plans and contract requirements.
- Review construction staking to assure accuracy and sufficiency at each stage of construction.

TASK PREPARATORY QUALITY PLANNING MEETINGS

Prior to the start of a Task, the Superintendent conducts a meeting with key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

During the meeting, the Superintendent communicates the Task quality requirements and reinforces heightened awareness for critical requirements. Topics for a Task quality plan meeting include:

- Conflicts that need resolution
- Required quality documents and a verification of availability to personnel carrying out, supervising, or inspecting the Task
- Record keeping requirements and the availability of necessary forms
- Review methods and sequences of installation
- Special details and conditions
- Standards of workmanship
- Heightened awareness of critical quality requirements
- Quality risks
- Tasks quality inspection form

Specifically, the preparatory planning will include:

- Review contract requirement plans and specifications.
- Check and verify submittals, plans and materials certifications for contract requirements and submit to FHWA. Provide statement and signature of verification.
- A narrative of the work activity describing methods, locations, crews, equipment and processes that will be used to complete the work.
- Review contract requirements jointly with construction crew, foremen and FHWA personnel prior to beginning work.

Work on a quality-controlled Task will not begin until the preparatory planning meeting is performed.

PHASE 2: INITIAL PHASE

Phase 2 is the Initial Phase occurs when crews are ready to start work to ensure work begins only when it does not adversely impact quality results. Inspections are performed before work starts and after work starts.

Records of the initial phase inspection is maintained using the Initial Phase Checklist form appearing as an exhibit in this subsection.

JOB-READY INSPECTION BEFORE WORK BEGINS

For each Task, the Superintendent or a qualified inspector performs job-ready quality inspections to ensure that work activities begin only when they should begin. Job-ready quality inspections verify that conditions conform to the project quality requirements.

INITIAL WORK INSPECTION

For each Task, the Superintendent or a qualified inspector performs an initial work in process inspection when the first representative portion of a work activity is completed.

Specifically, the initial work inspection will include:

- Verify that the ongoing construction will result in the end product meeting the contract requirements. Verify by inspecting, measuring and testing.

PHASE 3: FOLLOW-UP PHASE

Phase 3 is the follow-up phase that occurs while work is in process to assure that work conforms to quality project requirements and continues only when it does not adversely impact quality results.

Records of the follow-up phase inspection is maintained using the Initial Contractor Quality Control form appearing as an exhibit in this subsection. Records of the Task completion inspections is maintained using the Task Completion Inspection form appearing as an exhibit in this subsection.

Procedures that will be used on this project to conduct the Phase 3 Follow-up phase of control are as follows.

WORK IN PROCESS FOLLOW-UP

The Superintendent or a qualified inspector performs ongoing work in process quality inspections to ensure that work activities continue to conform to project quality requirements.

PUNCH ITEM CORRECTIONS

If the Superintendent or inspector observes an item for correction prior to a Task completion inspection, the item is identified for correction. During the Task completion inspection each punch item correction is verified.

Any outstanding punch items remaining after the Task completion inspection is deemed a nonconformance.

TASK COMPLETION INSPECTION

For each Task, the Quality Manager or a qualified inspector inspects the completion of each Task to verify that work conforms to project quality requirements.

Completion quality inspections are performed for each Task. Completion quality inspections are conducted before starting other work activities that may interfere with an inspection.

Any outstanding punch items remaining after the Task completion inspection is deemed a nonconformance.

SOURCE INSPECTIONS

Source quality inspections are required when quality characteristics cannot or will not be verified during subsequent processing. The Quality Manager determines if a source inspection is necessary to validate supplier quality before materials are delivered to the project jobsite.

The Superintendent ensures that each Task that uses the source inspected materials proceed only the material has been accepted by the source inspection.

HOLD POINTS FOR CUSTOMER INSPECTIONS

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

PHASE 4: TASK COMPLETION INSPECTIONS

For each Task, the Quality Manager or a qualified inspector inspects the completion of each Task to verify that work conforms to project quality requirements.

Completion quality inspections are performed for each Task. Completion quality inspections are conducted before starting other work activities that may interfere with an inspection.

Any outstanding punch items remaining after the Task completion inspection is deemed a nonconformance.

Specifically, the task completion inspection includes:

- Inspections and measurements as required by Table 153-2, included as an exhibit in an attachment to this Quality Assurance/Quality Control Plan.
- Verify that the ongoing construction will result in the end product meeting the contract requirements. Verify by inspecting, measuring and testing.
- Provide immediate presence to communicate status of work to FHWA personnel and contractor personnel for quality control issue resolution.
- Verify completed work meets contract requirements. Implement form 470 Notification of Completion of Work as required.

QC PLAN IMPLEMENTATION AND REPORTING

[CompanyName] will implement QC activities as described by quality control plans accepted by the customer. Work will not begin until the plan is approved by the customer and a preparatory meeting is performed.

DAILY QUALITY CONTROL REPORTING

The Superintendent records a summary of daily work activities. The report will include:

- Schedule Activities Completed

- General description of work activities in progress.
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Supplier and Company Crews on site
- Visitors and purpose
- General Remarks
- Improvement Ideas
- Weather conditions

The Daily Quality Control Report will be completed daily and provided to the customer at the weekly coordination meeting.

Additional detail on [CompanyName] policies and procedures for the preparation of the daily report appears in Quality Manual section 7.6 Daily Quality Control Report.

NOTIFICATION OF COMPLETION OF WORK

Upon completion of a quality-controlled task, a 470 Notification of Completion of Work form will be completed and provided to the customer at the weekly coordination meeting.

[CompanyName]
Master Task List

Project ID	Project Name		
[ProjectNumber]	[ProjectName]		

Task	Approved By	Date
Section 152 Construction Survey and Staking		
Section 201 Clearing and Grubbing		
Section 203 Removal of Structures and Obstructions		
Section 204 Roadway Excavation		
Section 205 Rock Blasting		
Section 207 Earthwork Geotextiles		
Section 208 Structural Excavation and Backfill for Selected Major Structures		
Section 209 Structure Excavation and Backfill		
Section 211 Roadway Obliteration		
Section 212 Linear Grading		
Section 251 Riprap		
Section 252 Special Rock Embankment and Rock Buttress		
Section 253 Gabions and Revet Mattresses		
Section 255 Mechanically Stabilized Earth Walls		
Section 256 Permanent Ground Anchors		
Section 258 Reinforced Concrete Retaining Walls		
Section 260 Rock Bolts		
Section 301 Untreated Aggregate Courses		
Section 303 Road Reconditioning		
Section 308 Minor Crushed Aggregate		
Section 309 Emulsified Treated Asphalt Base Course		
Sections 401, 402, or 403 Hot Asphalt Concrete Pavement		
Section 404 Minor Hot asphalt Concrete		
Section 409 Asphalt Surface Treatment		
Section 411 Asphalt Prime Coat		

Task	Approved By	Date
Section 412 Asphalt Tack Coat		
Section 416 Continuous Cold Recycled Asphalt Base Course		
Section 551 Driven Piles		
Section 552 Structural Concrete		
Section 553 Prestressed Concrete		
Section 554 Reinforcing Steel		
Section 555 Steel Structures		
Section 556 Bridge Railing		
Section 559 Waterproofing		
Section 562 Temporary Works		
Section 564 Bearing Devices		
Section 601 Minor Concrete Structures		
Section 602 Culverts and Drains		
Section 603 Structural Plate Structures		
Section 604 Manholes, Inlets, and Catch Basins		
Section 605 Underdrains, Sheet Drains, and Pavement Edge Drains		
Section 606 Corrugated Metal Spillways		
Section 607 Cleaning, Reconditioning, and Repairing Existing Drainage Structures		
Section 609 Curb and Gutter		
Section 617 Guardrail		
Section 618 Concrete Barriers and Precast Guardwalls		
Section 619 Fences, Gates, and Cattle Guards		
Section 620 Stone Masonry		
Section 621 Monuments and Markers		
Section 624 Topsoil		
Section 625 Turf Establishment		
Section 626 Plants, Trees, Shrubs, Vines, and Groundcovers		
Section 629 Rolled Erosion Control Products and Cellular Confinement Systems		
Section 633 Permanent Traffic Control		
Section 634 Permanent Pavement Markings		
Section 635 Temporary Traffic Control		

Task	Approved By	Date
Section 636 Signal, Lighting, and Electrical Systems		
Section 646 Roadside Development		

US DEPARTMENT OF TRANSPORTATION
Federal Highway Adminstration

INSPECTOR'S DAILY RECORD OF CONSTRUCTION OPERATIONS

Project _____

Contractor/Subcontractor _____

_____

Date _____

Shift _____ To _____

Weather/Temp. _____

Description and Location of Work

A _____
B _____
C _____
D _____
E _____
F _____
G _____
H _____
I _____
J _____

NO.	LABOR CLASSIFICATION	PRODUCTION TIME (Work Hours)										TOTAL WORK TIME
		A	B	C	D	E	F	G	H	I	J	

FHWA 1413.WPF

US DEPARTMENT OF TRANSPORTATION
Federal Highway Adminstration

INSPECTOR'S DAILY RECORD OF CONSTRUCTION OPERATIONS

Project _____

Contractor/Subcontractor _____

_____

Date _____

Shift _____ To _____

Weather/Temp. _____

Description and Location of Work

A _____
B _____
C _____
D _____
E _____
F _____
G _____
H _____
I _____
J _____

NO.	EQUIPMENT TYPE	A	B	C	D	E	F	G	H	I	J	TOTAL WORK TIME	IDLE *
		PRODUCTION TIME (Equipment Hours)											

* B = Broken Down, W = No Available Work. P = No Operator. S = Suspended

Traffic Control Checked	☐	YES	☐	NO	Traffic Control Problems	☐ YES	☐ NO
Erosion Control Checked	☐	YES	☐	NO	Erosion Control Problems	☐ YES	☐ NO
Unsafe Operations	☐	YES	☐	NO	Accidents	☐ YES	☐ NO

NARRATIVE REPORT: *Descriptions, Problems, Visitors, Materials Received, etc.*

It is hereby certified that the information contained in this record is accurate, and that all work documented herein complies with the requirements of the contract. Any exceptions to this certification are documented as a part of this record.

ITEM NO.	DESCRIPTION	LOCATION - STATIONS	QTY.	REMARKS

REVIEWED BY		REPORTED BY	
SIGNATURE *(Project Engineer)*	DATE	SIGNATURE *(Inspector)*	DATE

WFLHD 470

Notification of Completion of Work

Date/Time: _____

Project: _____

Item Number:_____ Item Description: _____

Location: _____

I certify that the work identified above has been completed according to the contract requirements and checked for compliance. I further certify that I am qualified and designated, in writing, to perform this Quality Control/Assurance function on this project.

_____ _____

Name (printed) Signature

Remarks:

[FHWA use below line]

If box one or two is checked, the contractor can proceed immediately with the next phase of work.

Received by: _____ _____

(name: signature/print) (date/time)

☐ 1. This work will not be inspected.

☐ 2. This work was inspected and no deficiencies were found.

☐ 3. This work was inspected and deficiencies were found as noted below. The contractor must resubmit a WFLHD 470 upon correction of this work.

☐ 4. This work was inspected and deficiencies were found as noted below. The contractor can proceed with the next phase of work as noted below.

Remarks:

Completed by: _____ _____

(name: signature/print) (date/time)

Returned to Contractor by: _____ _____

(name: signature/print) (date/time)

[CompanyName]
Task Inspection Form

Task :		
Project: Id# [ProjectNumber]	Project Name: [ProjectName]	Subcontractor and Supplier Company ID/Name:
Location/Area:	Reference drawing version #:	Crew ID/Name

Compliance Verification	**Heightened Awareness Checkpoints**
☐ Compliance with initial job-ready requirements ☐ Compliance with material inspection and tests ☐ Compliance with work in process first article inspection requirements ☐ Compliance with work in process inspection requirements ☐ Compliance with Task completion inspection requirements ☐ Compliance with inspection and test plan	☐ [Insert items identified at project startup and preparatory meetings] ☐ ☐ ☐ ☐

Production Notes:
Reported Nonconformances:

Verification of Task Completion (sign and date)	
Subcontractor and Supplier Sign and date*: Task verified complete to specifications (sign and date)	
Project Superintendent Sign and date*: Task verified complete to specifications (sign and date)	
Project Superintendent score subcontractor/crew performance and feedback notes	**Quality:** 5 4 3 2 1 **Safety:** 5 4 3 2 1 **Delivery:** 5 4 3 2 1
Quality Manager Sign and date*: Task verified complete to specifications (sign and date)	
Quality Manager score quality performance and feedback notes	**Quality: 5 4 3 2 1**

* On behalf of the contractor, I certify that this report is complete and correct, and equipment and material used, and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

[CompanyName]
Punch List

Project ID	Project Name	Punch List Type
[ProjectNumber]	[ProjectName]	☐ Tasks _____ ☐ Project Final Punch ☐ Pre-Final Customer Inspection ☐ Final Acceptance Inspection
Inspection Date	**Preparer**	

Item	Location	Description	Due Date	Compl. Date	Item Completion Verification: Super Initial	Item Completion Verification: QA Initial

Punch List Completion Date	Final QA Sign-off	Remaining Nonconformances Reported ID # and Description

[CompanyName]
Project Completion Inspection Form

Project: ID:	Project Name:	Location/Area:	
[ProjectNumber]	[ProjectName]		

Compliance Verification

- ☐ Compliance with material inspection and tests
- ☐ Compliance with inspection requirements
- ☐ Compliance with functional tests if required
- ☐ Compliance with inspection and test plan
- ☐ Punch lists corrections complete

Heightened Awareness Checkpoints

- ☐ [Insert items identified at project startup, preparatory and status meetings]
- ☐
- ☐
- ☐
- ☐

Notes:

Reported Nonconformances:

Verification of Project Completion (sign and date)

Project Superintendent verified complete to specifications (sign and date)	Sign and date*:
Quality Manager verified complete to specifications (sign and date)	Sign and date*:

* On behalf of the contractor, I certify that this report is complete and correct, and equipment and material used, and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

D. QUALITY CONTROL SAMPLING AND TESTING

The Quality Inspection and Test Plan form lists inspections and tests that will be performed on this project. The Quality Inspection and Test Plan exhibit is included as an exhibit in this subsection.

Results of inspections and tests will be recorded as follows:

- Task inspection results will be recorded on the Task Inspection Form.
- Test results will be recorded on the Inspection and Test Form.
- Daily inspections of work in process will be recorded on the Daily Quality Control Report.

Form exhibits are included as an exhibit in this subsection.

REQUIRED SAMPLING AND TESTING

Sampling and testing will be provide as listed in Table 153-1, included as an exhibit in this subsection.

MATERIAL QUALITY INSPECTIONS

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 Task that uses the source inspected materials proceed only after the material has been accepted by the material quality inspection or test.

PREPARATION OF 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 customer quality inspection
- Specification requirements for each quality inspection and test

Additional detail on [CompanyName] policies and procedures for the preparation of the test plan appears in Quality Manual section 2.6 Project Quality Inspection and Test Plan.

SAMPLE LABELING

All samples will be labeled with the following information:

- Project number
- Source of material
- Pay item number
- Sample number
- Date sampled
- Time sampled
- Location sample taken
- Name of person sampling
- Name of person witnessing sampling; and
- Type of test required on sample.

RECORDS OF QUALITY CONTROL TEST RESULTS

Results of each test will be recoded. The record will include all the sample labeling information listed above.

INSPECTION AND TEST STATUS

The status of each quality control inspection or test is clearly marked by tape, tag, or other easily observable signal to ensure that only items that pass quality inspections is accepted.

For each quality-controlled Task, the Quality Manager determines the appropriate method of identification to show inspection and test status.

For each quality-controlled material, the Quality Manager determines the appropriate method for identifying quality inspection and test status.

Additional detail on [CompanyName] policies and procedures for the for inspection and test status appears in Quality Manual sections 2.5 Identification of Quality Controlled Tasks, 5.6 Controlled Material Identification and Traceability, and 8.12Inspection and Test Status.

Table 153-1
Quality Control Sampling and Testing Requirements

Material or Product	Characteristic	Test Method or Specification	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Section 301 Untreated Aggregate Courses						
Aggregate base Grading _____ (Aggregate Production)	Gradation	AASHTO T 27 & AASHTO T 11	1 for each 6 hours of production but not less than 2 for each day	Flowing aggregate stream (bin or belt discharge) or conveyor belt	Yes when requested	End of shift
	Fractured faces	ASTM D 5821	"	"	"	"
	Sand equivalent	AASHTO T 176 Alternate Method No. 2, Referee Method	"	"	"	"
	SE/P_{75} Index	See Subsection 101.04	"	"	"	"
Aggregate surface course (Aggregate Production)	Gradation	AASHTO T27 & AASHTO T 11	1 for each 6 hours of production but not less than 2 for each day	Flowing aggregate stream (bin or belt discharge) or conveyor belt	Yes, when requested	End of shift
	Fractured faces	ASTM D 5821	"	"	"	"
	Liquid limit	AASHTO T 89	"	"	"	"
	Plasticity Index	AASHTO T 90	"	"	"	"
Subbase Grading _____ (Aggregate Production)	Gradation	AASHTO T27 & AASHTO T 11	1 for each 6 hours of production but not less than 2 for each day	Flowing aggregate stream (bin or belt discharge) or conveyor belt	Yes, when requested	End of shift
	Fractured faces	ASTM D 5821	"	"	"	"
	Sand equivalent	AASHTO T 176 Alternate Method No. 2, Referee Method	"	"	"	"
	SE/P_{75} Index	See Subsection 101.04	"	"	"	"
Section 309 Emulsified Asphalt Treated Base Course						
Emulsified asphalt treated aggregate base Grading _____ (Aggregate	Gradation	AASHTO T27 & AASHTO T 11	1 for each 6 hours of production but not less than 2 for each day	Flowing aggregate stream (bin or belt discharge) or conveyor belt	Yes, when requested	End of shift
	Fractured faces	ASTM D 5821	"	"	"	"

Production)	Sand equivalent	AASHTO T 176 Alternate Method No. 2, Referee Method	"	"	"	"
	SE/P_{75} Index	See Subsection 101.04	"	"	"	"

Table 153-1 continued
Quality Control Sampling and Testing Requirements

Material or Product	Characteristic	Test Method or Specification	Sampling Frequency	Point of Sampling	Split Sample	Reporting Time
Sections 401, 402, or 403 Hot Asphalt Concrete Pavement						
Aggregate[1] (Aggregate Production)	Gradation	AASHTO T 27 & AASHTO T 11	1 for each 6 hours of production but not less than 2 for each day	Flowing aggregate stream (bin or belt discharge) or conveyor belt	Yes, when requested	End of shift
	Fractured faces	ASTM D 5821	"	"	"	"
	Sand equivalent	AASHTO T 176 Alternate Method No. 2, Referee Method	"	"	"	"
	Flat & Elongated Particles[2]	ASTM D 4791	1 per each stockpile plus 1 run on the combined JMF gradation[3]	Flowing aggregate stream (bin or belt discharge) or conveyor belt or composite samples from each stockpile	"	"
	Fine Aggregate Angularity[2]	AASHTO T 304, Method A	"	"	"	72 hours
Sections 404 Minor Hot Asphalt Concrete						
Asphalt mixture	Compaction (Roadway paving)	ASTM D 2950	1 every 1000 feet each lift	In place	No	End of shift

1. If aggregate is separated into two or more stockpiles, sample and test each stockpile.
2. Not required for Sections 402 and 403.
3. Run 1 test on each stockpile within the first 10 percent of production. For stockpiles that contain predominately coarse aggregates, run the Flat and Elongated Particles. For stockpiles that contain predominately fine aggregates, run the Fine Aggregate Angularity. Run 1 test on the combined JMF gradation and submit as part of mix design.

F. SUBCONTRACTOR AND SUPPLIER CONTROLS

Subcontractors and suppliers will be used to provide products, materials and/or services. Key subcontractors and suppliers that will be used on this project are listed on the Source of Supply form. A Source of Supply form exhibit is included in this subsection.

The qualifications of listed suppliers have been verified. Supplier and Subcontractor Qualification form exhibits are included in this subsection.

[CompanyName] verifies the qualifications of subcontractors and suppliers to ensure that they are capable of completely carrying out their assigned responsibilities. Quality requirements are defined, verified, and documented before they are approved for a project.

QUALIFICATION OF SUBCONTRACTORS AND SUPPLIERS

The Quality Manager qualifies outside organization and company work department capabilities to ensure that they are capable of completely carrying out their assigned quality responsibilities before approving and signing the contract, purchase order, or work order.

Subcontractors and suppliers must meet all Quality System requirements by either 1) working under the [CompanyName] Quality System or 2) operating their own quality program if it meets [CompanyName] Quality System requirements.

The Quality Manager defines quality-related credentials for each project Task that affects quality including required:

- Organization and personnel licenses
- Personnel training
- Organization and personnel certifications
- Organization and personnel experience
- Senior person designated as Quality Manager
- Knowledge of Company quality standards
- Demonstrated capability to complete work to Company quality standards
- Demonstrated skills, knowledge, and experience
- Effective self-inspection process
- Access to codes, standards and product instructions
- Equipment availability
- Production capacity
- Demonstrated results

For critical components, the Quality Manager determines if a source quality inspection is necessary to validate supplier quality and delivery capabilities.

When the qualification assessment identifies minor nonconformances to the subcontract requirements, the Quality Manager may approve a provisional subcontract. The provisional subcontract supplements the subcontract with requirements for actions that address correction of the nonconformances. All nonconformances must be corrected before work in the affected area begins.

QUALIFICATION OF TESTING LABORATORIES

Independent laboratories performing tests or quality inspections have additional requirements for certification by a nationally recognized testing accreditation organization as appropriate for the scope of the inspection or test:

- NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
- NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- The American Association of State Highway and Transportation Officials (AASHTO)
- International Accreditation Services, Inc. (IAS)
- U. S. Army Corps of Engineers Materials Testing Center (MTC)
- American Association for Laboratory Accreditation (A2LA) program

PURCHASE ORDER REQUIREMENTS

The Project Manager ensures that materials, equipment and services are purchased only from the supplier listed on the Project Subcontractor and Supplier List form (see section 6.6Project Subcontractor and Supplier List.)

The Project Manager holds outside organizations to the same quality requirements that must be met by [CompanyName]. The Project Manager ensures that subcontracts and purchase orders clearly specify quality requirement expectations including:

- Conformance to the [CompanyName] Quality System or the subcontractor's own quality program if it meets [CompanyName] Quality System requirements.
- Conformance to contract specifications (Section 3 Contract Specifications)
- Conformance to project quality standards (Section 5 Project-Specific Quality Standards)
- Quality Management practices including
    - Performance of self-inspections.
    - Control of quality non-conformances and responsive corrections
    - Prevention of non-conformances
    - Controls that ensure completion of post-construction service work
    - Participation in quality training
- Preparation of submittals
- Participation in project planning meetings
- Participation in Task planning meetings
- Handling, storage, packaging, and delivery, as applicable
- Product or material identification for traceability

PURCHASE ORDER APPROVAL

The Project Manager ensures that contracts and purchase orders are issued only to qualified outside organizations. The Project Manager must review, approve, and sign each purchase order.

The outside organization must agree to the purchase order terms and specifications, and then sign the contract or purchase order.

Additional detail on [CompanyName] policies and procedures for the selection and qualification appear in Quality Manual section 6.2Qualification of Outside Organizations and Company Departments and 6.8Project Purchase Order Approvals.

[CompanyName]
Project Subcontractor and Supplier List

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

Tasks	Subcontractor and Supplier Name	Description of Services	Quality Control Method (Not Applicable/ Subcontractor and Supplier QC/ [CompanyName] QC)	Remarks

H. ATTACHMENTS

In addition to the information contained in the sections of this Quality Assurance/Quality Control Plan, the following documents are attached to this Quality Assurance/Quality Control Plan:

- [CompanyName] Quality Manual
- Table 153-2

Table 153-2
Quality Control Inspection and Measurement Requirements

Activity	Characteristic	Specification or Activity	Tolerance and Reference	Measurement or Inspection Frequency	Point of Inspection or Measurement	Reporting Time
Section 152 Construction Survey and Staking						
Construction staking	Construction staking	Measurements to check accuracy and adequacy of construction staking	Subsection 152.03 and Table 152-1	15% of staked, lines points or marks. and 100% of staked or surveyed points, marks or lines on bridges, walls or other major structures	Completed staking	End of shift
Section 201 Clearing and Grubbing						
General clearing	Clearing and grubbing preparation, preservation of adjacent vegetation	Visual inspection	Subsection 201.03	Daily	Clearing operation	24 hrs.
Clearing	Falling, rounding areas and trimming	"	Subsection 201.04	"	"	"
Grubbing	Grubbing excavation and embankment areas and backfill	"	Subsection 201.05	"	"	"
Section 203 Removal of Structures and Obstructions						
Salvaging material	Use of reasonable care replacing or repairing packing, matching, marking and stockpiling	Visual inspection	Subsection 203.03	Daily	Salvaging operation	24 hrs.
Removing material	Saw cutting, debris containment removal of culverts and structures and obstructions	"	Subsection 203.04	"	Removing operation	"
Disposing material	Remove, burn, bury	"	Subsection 203.05	"	Disposing operation	"

Section 204 Roadway Excavation						
Preparation for Roadway excavation and embankment	Preparation for cut or embankment	Visual inspection	Subsection 204.04	Daily	Preparatory Grading Operation	24 hrs.
Conserved topsoil	Conserving, stockpiling and separating	"	Subsection 204.05	"	Topsoil removal operation	"
Roadway excavation general	General requirements Rock cuts Earth cuts	"	Subsection 204.06	"	Grading operation	"
Sub excavation	Cross section prevent contamination, disposal, backfill and compaction	"	Subsection 204.07	"	"	"
Preparing foundation for embankment construction	Less than 4 feet above natural ground. Scarification of existing asphalt, concrete or gravel. Across ground not capable of supporting equipment. Existing slopes steeper than 1:3, embankment benching	"	Subsection 204.09 (a), (b),(c),(d)	"	"	"
Embankment construction	General, Embankment within roadway prism, Individual rock fragments and boulders, Outside roadway prism, other embankments	"	Subsection 204.10 (a) through (f)	"	"	"
Sloping, Shaping and finishing	Sloping, stepped slopes, shaping, finishing	"	Subsection 204.13 (a) through(d)	"	"	"
Section 205 Rock Blasting						
Blasting	See Section 205 for blasting planning, inspection and reporting requirements.					
Section 207 Earthwork Geotextiles						
Geotextiles general	General	Visual inspection	Subsection 207.03	Daily	Geotextile placement	24 hrs.
Application	Grade preparation, placement, overlap, cover	"	Subsection 207.04	"	"	"

Permanent erosion control applications	Grade preparation, placement, overlap, cover	"	Subsection 207.05	"	"	"
Section 208 Structural Excavation and Backfill for Selected Major Structures						
Preparation for structural excavation	Preparation	Visual inspection	Subsection 208.03	Daily	Structural excavation	24 hrs.
General structure excavation for selected major structures	Excavation, OSHA, saw cutting, conserving stockpiling and disposing	"	Subsection 208.04	"	Structural excavation	"
Foundation preparation	On bedrock, on excavated surface other than bedrock, keyed into undisturbed material, unstable material below footing elevation, using piles	"	Subsection 208.09 (a) through (d)	"	Structural excavation	"
Backfill	Placement, layers, loads on concrete, lift thickness	"	Subsection 208.10		Installation	"
Section 209 Structure Excavation and Backfill						
Preparation for structural excavation	Preparation	Visual inspection	Subsection 209.03	Daily	Structural excavation	24 hrs.
General structure excavation	Excavation, OSHA, saw cutting, conserving stockpiling and disposing	"	Subsection 209.04	"	"	"
Foundation preparation	Unsuitable material and keying	"	Subsection 209.08	"	"	"
Bedding	For box culverts and structures other than pipe culverts. For pipe culverts	"	Subsection 209.09	"	"	"
Backfill	Pipe culverts, arch culverts with headwalls, patching existing pavement, loads against concrete, lift thickness	"	Subsection 209.10	"	"	"

Section 211 Roadway Obliteration						
Roadway obliteration description	Method 1, full obliteration, Method 2, localized obliteration	Visual inspection	Subsection 211.01	Daily	Obliteration	24 hrs.
Rigid material, non-rigid material	Non-asphalt material, asphalt material, asphalt contaminated material	"	Subsection 211.02	"	"	"
Section 212 Linear Grading						
Roadway preparation	Clear vegetation and obstructions	Visual inspection	Subsection 212.02	Daily	Roadway	24 hrs.
Excavation and embankment	Construct roadway, moisture content, lift thickness and compaction	Visual inspection and measurement according to Subsection 204.11(a)	Subsection 212.03	"	"	"
Grading tolerance	Alignment and profile	Measurement	Subsection 212.04	"	"	"
Section 251 Riprap						
Riprap, general	Preparatory work in accordance with sections 209 and 207	Visual inspection	Subsection 251.03	Daily	Riprap placement	24 hrs.
Placed riprap	Placement	"	Subsection 251.04	"		"
Keyed riprap	"	"	Subsection 251.05	"		"
Energy dissipaters	"	"	Subsection 251.06	"	Installation	"
Section 252 Special Rock Embankment and Rock Buttress						
Special rock embankment, rockery walls and buttress	Placement	Visual inspection	Subsection 252.03	Daily	Installation	24 hrs.
Section 253 Gabions and Revet Mattresses						
Gabions and revet mattresses general	Survey, verify limits drawings and structural excavation	Visual inspection and verification measurement see Subsection 253.03	Subsection 253.03	Daily	Installation	24 hrs.
Basket assembly	Damage to wire coatings and fastening	Visual inspection	Subsection 253.04	"	"	"
Structure erection	Placement, fastening	"	Subsection 253.05	"	"	"

Cell filling	Alignment, internal connecting wires, filling of cells	"	Subsection 253.06	"	"	"
Backfilling	Geotextile placement, structural backfill and compaction	Visual inspection, see Section 209 under Table 153-1 for testing requirements	Subsection 253.07	"	"	"
Section 255 Mechanically Stabilized Earth Walls						
MSE walls general	Survey, verify limits drawings and structural excavation	Visual inspection and verification measurement see Subsection 255.03	Subsection 255.03	Daily	Installation	24 hrs.
Wall erection	Concrete faced walls, wire faced walls, gabion faced walls	Visual inspection	Subsection 255.04	"	"	"
Backfill	Select granular and structural backfill	Visual inspection, see Section 209 under Table 153-1 for testing requirements				
Section 256 Permanent Ground Anchors						
Permanent ground anchors tendon fabrication	General, bond length, centralizes, unbonded length, bearing plates	Visual inspection	Subsection 256.05 (a) through (e)	Daily	Installation	24 hrs.
Storing and handling		"	Subsection 256.06	"	"	"
Installation	Drilling, inserting, grouting and corrosion protection,	"	Subsection 256.07	"	"	"
Testing and Stressing	Testing equipment, Performance and proof tests, lock off	See Subsection 256.08 for testing and reporting requirements				
Section 258 Reinforced Concrete Retaining Walls						

Reinforced concrete retaining walls general	Survey, verify limits drawings and structural excavation	Visual inspection and verification measurement, see Subsection 258.03	Subsection 258.03	Daily	Installation	End of shift
Reinforcing steel	Order lists, fabrication, shipping, placing, splicing	Visual inspection	Subsection 258.04, and Section 554	"	"	24 hrs.
Structural concrete	Mix design, store, handle, batch, mix, deliver, place, mix quality control	Visual inspection	Subsection 258.05 and Section 552	"	"	"
Backfilling	Structural backfill and compaction	Visual inspection, see Section 258 under Table 153-1 for testing requirements				
Section 260 Rock Bolts						
Rock bolt general	Sizing and coupling	Visual inspection	Subsection 260.04	Daily	Installation	24 hrs.
Handling and storage	Handling and storage	"	Subsection 260.05	"	"	"
Installation	Drilling, cleaning holes, inserting bolts, grouting, curing, tensioning, resins, hollow stem rock bolts	"	Subsection 260.06	"	"	"
Section 301 Untreated Aggregate Courses						
General	Grade preparation	Visual inspection	Subsection 301.03	Daily	Installation	24 hrs.
Mixing and spreading	Pugmill, optimum moisture, lift thickness	"	Subsection 301.04	"	"	"
Surface Tolerance	Measured elevation check or straightedge measurement	Verification measurement	Subsection 301.06	Minimum of one verification measurement every 200 feet horizontal	Roadway	4 hrs.
Section 303 Road Reconditioning						
Ditch reconditioning	Cleanout, reshape, positive drainage	Visual inspection	Subsection 303.03	Daily	Roadway	24 hrs.

Shoulder reconditioning	Repair soft and unstable material, slide material, reshape	"	Subsection 303.04	"	"	"
Roadbed reconditioning	Repair soft and unstable areas, scarify, shape, finish	Visual inspection and verification measurement	Subsection 303.05	Daily and minimum of one finish tolerance verification measurement every 200 feet horizontal	"	24 hrs.
Aggregate surface reconditioning	Repair soft and unstable areas, scarify, shape, finish	"	Subsection 303.06 & 301.06	"	"	"
Roadway reconditioning	Reconditioning of all roadway features	"	Subsection 303.07	"	"	"
Pulverizing	Scarify and pulverize, shape and finish	"	Subsection 303.08	"	"	"
Section 308 Minor Crushed Aggregate						
Preparing surface	Roadway aggregate, bedding and backfill aggregate	Visual inspection and verification measurement see Subsection 303.07	Subsection 308.03	Daily	Roadway	24 hrs.
Placing	Roadway aggregate, bedding and backfill aggregate	Visual inspection and verification measurement see Subsection 308.05(a)	Subsection 308.04	"	"	"
Compacting and finishing	Roadway aggregate, bedding and backfill aggregate	Visual inspection and verification measurement see Subsections 204.11 & 301.06	Subsection 308.05	Daily and Minimum of one finish tolerance verification measurement every 200 feet horizontal	"	4 hrs.
Section 309 Emulsified Treated Asphalt Base Course						
General	Grade preparation	Visual inspection	Subsection309.03	Daily	Roadway	24 hrs.
Mixing and spreading	Pugmill, optimum moisture, lift thickness	"	Subsection309.04	"	"	"

Surface tolerance		Verification measurements see Subsections 204.11 & 301.06	Subsection309.06	Daily and minimum of one finish tolerance verification measurement every 200 feet horizontal	"	4 hrs.
Sections 401, 402, or 403 Hot Asphalt Concrete Pavement						
See Subsection 401.12 for inspection, measuring, testing and reporting requirements of production startup procedures						
Mixing plant	All plants, drum dryer-mixer plants, batch and continuous plants	Visual inspection	Subsection 401.04(a),(b) or (c)	Once at initial set up of plant or change in plant system	Installation	End of shift
Pavers	Screeds, augers, heated, paving width, hopper, automatic feed controls, speed, smoothness, automatic screed controls	"	Subsection 401.05 (a) through (h)	Once at mobilization of paving machine or change of equipment	"	"
Surface preparation	Tack application	"	Subsection 401.06	Daily	Roadway	"
Weather limitations	Temperature, moisture	Verification measurement and visual inspection	Subsection 401.07	"	"	"
Asphalt preparation	Heating asphalt	Visual inspection	Subsection 401.08	"	"	"
Aggregate preparation	Mineral filler, mixing, pugmill, moisture content	"	Subsection 401.09	"	Plant	"
Mixing	Mixing and discharge temperature	"	Subsection 401.10	"	Plant	"
Hauling	Coating trailer beds, covers, access ports for checking temperature	"	Subsection 401.11	"	Plant or roadway	"
Production startup procedures	Pre-paving Conference and control strip	See Subsection 401.12 for testing and reporting requirements	Subsection 401.12	Before production paving	Plant and Roadway	
Placing and finishing	Placement temperature, line and grade control, offset longitudinal joint	"	Subsection 401.13	"	Roadway	"

Compacting		Visual inspection, and see Section 401 under Table 153-1 for testing requirements	Subsection 401.14			
Joints, trimming and cleanup	Completion of adjacent lanes, connections, tack for joints	"	Subsection 401.15	"	"	"
Section 404 Minor Hot asphalt Concrete						
Surface Preparation		Visual inspection	Subsection 404.03	Daily before paving	Roadway	End of shift
Weather limitations		"	Subsection 404.04	Daily	"	"
Hauling		"	Subsection 404.05	"	"	"
Placing		"	Subsection 404.06	"	"	"
Compacting	Roadway paving, and non-roadway paving	Visual inspection, and see Section 404 under Table 153-1 for testing requirements	Subsection 404.07			
Pavement Smoothness	Straightedge	Measurement	Subsection 404.08	One pavement smoothness tolerance verification measurement every 200 feet horizontal	Roadway	End of shift
Section 409 Asphalt Surface Treatment						
See Subsection 409.07 for inspection, measuring, testing and reporting requirements of production startup procedures						
Equipment	Equipment and capabilities	Visual inspection	Subsection 409.04	Once at mobilization of paving machine or change of equipment	Roadway	End of shift
Surface preparation	Existing asphalt surfaces, aggregate surfaces	"	Subsection 409.05	Daily before paving	"	"
Weather limitations	Ambient air and surface temperatures, precipitation	Verification measurement and visual inspection	Subsection 409.06	Daily	"	"

Asphalt application	Spray bar, calibration of distributor, protection of adjacent surfaces, application rate, temperature and area approval	"	Subsection 409.08	Daily	Roadway	"
Aggregate application	Application rate and area approval, overlap, rollers	"	Subsection 409.09	"	"	"
Section 411 Asphalt Prime Coat						
Equipment	Equipment and capabilities	Visual inspection	Subsection 411.03	Once upon mobilization		End of shift
Surface preparation	Compaction and surface tolerance	"	Subsection 411.03	Daily	Roadway	"
Weather limitations	Ambient air and surface temperatures, precipitation	"	Subsection 411.03	"	"	"
Asphalt application	Application, curing, blotter and maintenance	"	Subsection 411.03	"	"	"
Section 412 Asphalt Tack Coat						
Asphalt tack coat surface preparation	Finishing road surfaces for asphalt application	Visual inspection	Subsection 412.04	Daily	Installation	End of shift
Weather limitations	Temperature and moisture requirements	"	Subsection 412.05	"	"	"
Asphalt application	Application methods, rates, excess tack, curing	"	Subsection 412.06	"	"	"
Section 416 Continuous Cold Recycled Asphalt Base Course						
Surface preparation	Clean existing surface	Visual inspection	Subsection 416.04	Daily ahead of pavement milling	Roadway	End of shift
Weather limitations	Temperature and moisture requirements	"	Subsection 416.05	Daily	"	"
Pavement milling	Equipment requirements and reduction of oversize material	"	Subsection 416.06 (a) through (e)	Upon mobilization of equipment	"	"

Mixing and proportioning	Equipment requirements, quicklime incorporation and monitoring milling, mixing and placement	"	Subsection 416.07 (a) through (c)	Upon mobilization for equipment and daily for mixing and proportioning	"	"
Spreading, finishing and compacting	Paving equipment, Initial compaction, pavement smoothness, final compaction and curing	Visual inspection and verification measurement for smoothness	Subsection 416.08 (a) through (d)	Upon mobilization for equipment, one test every 200' horizontal for smoothness and daily for other	"	"
Fog seal	Fog seal and blotter	Visual inspection	Subsection 416.09	Daily	"	"
Section 551 Driven Piles						
Pile driving equipment	Hammers, approval of equipment, Driving appurtenances	Visual inspection and equipment submittal and approval documentation	Subsection 551.03 (a) through (c)	Before work and upon mobilization of equipment	Installation	24 hrs.
Preparation and driving	Tolerances, driving, corrections, handling, filling	Verification measurement for tolerances and visual inspection	Subsection 551.08	"	"	End of shift
Splices	Splice approval, welder certification, welding	Visual inspection	Subsection 551.09	"	"	"
Heaved piles	Re-drive all piles that heave more than 6mm	Visual inspection and verification measurements	Subsection 551.10	"	"	"
Pile cutoff	Cutoff	Visual inspection and verification measurements	Subsection 551.12	"	"	"
Unsatisfactory Piles	Reduced capacity, additional piles, repair, replacement	"	Subsection 551.13	"	"	"
Placing Concrete in piles	Pile cleanout, tremie, vibrating	"	Subsection 551.14	"	"	"
Section 552 Structural Concrete						
Storage and handling of materials	Storage, segregation, moisture	Visual inspection	Subsection 552.04	Daily	Batch site	End of shift

Measuring material	Cement, water, aggregate, additives	See 552.09(a)(6)	Subsection 552.05	"	"	"
Batching plant, mixers, and agitators	Batch plants, AASHTO requirements	Visual inspection	Subsection 552.06	"	"	"
Mixing	Central mix plant, truck mixer , drum condition, admixtures, revolutions, speed	See 552.09(a)	Subsection 552.07	"	"	"
Delivery	Hydration stabilizer admixture, truck mixture agitator, non-agitating equipment, discharge time limits, adding admixtures on site, re-tempering prohibition	Visual inspection See 552.09(a) & (b)	Subsection 552.08	"	Concrete placement location	"
Quality control of mix	Quality control plan, mixing inspection, plant operations and storage, batch tickets, delivery sampling and testing,	See subsection 552.09 for sampling, testing, materials verification and reporting requirements for mixing and delivery	Subsection 552.09 (a) & (b)	"	See Subsection 552.09	"
Temperature and weather conditions	Cold weather, hot weather	Verification measurement and visual inspection	Subsection 552.10	"	Installation	"
Handling and placing concrete	General, sequence of placement, placing methods, consolidation, underwater placement, railings and parapets	Visual inspection	Subsection 552.11	"	"	"
Construction joints	Horizontal construction joints, cleaning joints, form adjustments	"	Subsection 552.12	"	"	"

Expansion and contraction joints	Open joints, filled joints, steel joints, water stops, compression joint seals, elastomeric expansion joint seal	"	Subsection 552.13	"	"	"
Finishing plastic concrete	Work bridges, striking off and floating, finishing machines, settlement, camber, deflection, rail supports, prohibition of adding water to finishing of fresh concrete surfaces, straight edging, texturing, surfaces under bearings	Visual inspection and measurement verification, see Subsection 552.14 (a), (b), & (d) deflection, camber, finishing machine clearance straightedge and bearing elevation verification	Subsection 552.14 (a) through (d)	"	"	"
Curing concrete	Curing periods, forms in place method, water method, liquid membrane curing compound method	Visual inspection	Subsection 552.15 (a) through (c)	"	"	"
Finishing formed concrete surfaces	Class 1,2,3, 4, 5, 7 & 8 finishes	"	Subsection 552.16	"	"	"
Concrete anchorage devices	Approvals, fabrication, testing, proof loads	Visual inspection and measurement verification Subsection 552.17	Subsection 552.17	As required	"	"
Loads on new concrete structures	Loads on structures, and concrete strength, vehicles or construction equipment on structures, post tensioned structures	Visual inspection	Subsection 552.18	As required	"	"
Section 553 Prestressed Concrete						
See Section 553 for Prestressed Concrete for inspection measuring and reporting requirements.						
Section 554 Reinforcing Steel						

Order lists	Verify before Submittal and acceptance	Visual inspection	Subsection 554.03	As required	Fabricator	Before delivery
Identification	Tagging, bundling	"	Subsection 554.04	"	Storage	24 hrs.
Bending	Cold bend, tolerances	"	Subsection 554.05	"	Fabricator and installation	"
Protection of material	Storage, damaged material	"	Subsection 554.06	Daily	Storage and Installation	"
Epoxy coated reinforcing steel	Storage, handling, patching and repair, field repairs	"	Subsection 554.07	"	Installation	"
Placing and fastening	Support blocks, chairs, tie wires, spacing tolerances, cover,	Visual inspection and verification measurement. See Subsection 554.08 for placement tolerances	Subsection 554.08	"	"	End of shift
Splices	Approval, placement, laps, mechanical couplers	Visual inspection	Subsection 554.09	As required	"	24 hrs.
Section 555 Steel Structures						
Inspection, drawings, fabrication, annealing and stress relieving, bolt holes, pins and rollers, assembly – bolting, welded connections, preassembly of field connections, connections using unfinished turned or ribbed bolts.	Fabrication inspection requirements, see referenced Subsections for inspection, measuring, testing and reporting requirements		Subsections 555.03 through 555.15	As required	"	"

Connections using high strength bolts	Bolted parts, surface conditions, installation, rotational capacity tests, calibrated wrench tightening, direct tension indicator tightening, alternate design bolts, inspection	Visual inspection and verification measurements, see Subsection 555.17	Subsection 555.17(a), (b), (c) (1), (2), (3), (4), (5), (6), & (7)	"	Installation	End of shift
Welding	Welder qualifications, welding code,	Visual inspection and verification weld, prequalification and testing, see ANSI, AASHTO,AWS Bridge Welding Code D1.5	Subsection 555.18	"	"	"
Erection	Handling and storing materials, bearings and anchors, erection procedures, field assembly, erection pins, pin connections, misfits	Visual inspection and, see CASE under AISC quality certification program for inspection, measurement and reporting requirements	Subsection 555.19 (a) through (f)	Daily	Installation	End of shift
Section 556 Bridge Railing						
General	Anchor alignment, chamfer, rail erection and false work, finish grades	Visual inspection	Subsection 556.03	Daily	Installation	24 hrs.
Concrete railing		Visual inspection	Subsection 556.04 & Section 552	"	"	"
Steel Railing		"	Subsection 556.05 & Section 555	"	"	"
Aluminum railing		"	Subsection 556.06 & Section 555	"	"	"
Timber railing		"	Subsection 556.07 & Section 557	"	"	"
Remove and reset bridge railing		"	Subsection 556.08	"	"	"

Painting		"	Subsection 556.09 & Section 563	"	"	"
Section 559 Waterproofing						
Membrane waterproofing	Surface preparation, temperatures, application	Visual inspection	Subsection 559.03	Daily	Installation	24 hrs.
Section 562 Temporary Works						
Construction	Form panels, exposed curved surfaces, tell-tales	Visual inspection and verification measurement for tell tales.	Subsection 562.06	Daily	Installation	End of shift or immediatel y for tell - tales
Maintenance and inspection	Manufactured devices, in – depth inspection, Certification program for bridge temporary works	See Subsection 562.07 for inspection, monitoring, certification and reporting requirements	—	—	—	—
Removal	False work and form removal	Visual inspection	Subsection 562.08	Daily	Installation	24 hrs.
Section 564 Bearing Devices						
General	Drawings, fabrication, packaging, handling and storage, construction and installation	Visual inspection and verification measurements	Subsection 564.03	As required	Fabrication and installation	24 hrs.
Elastomeric bearings	Fabrication, marking placement	"	Subsection 564.04	"	Fabrication and installation	"
Rocker, roller and sliding bearings	Fabrication and placement	"	Subsection 564.05	"	Fabrication and installation	As directed
Masonry, sole and shim plates for bearings	"	"	Subsection 564.06	"	Fabrication and installation	"
TFE surfaces for bearings	Fabrication	See Subsection 562.07 for inspection, monitoring, certification and reporting requirements				
Anchor bolts	Material, placement and adjustments	Visual inspection	Subsection 564.08	As required	Installation	24 hrs.
Bedding of masonry plates	—	Visual inspection	Subsection 564.09	"	"	"

Section 601 Minor Concrete Structures						
Concrete Composition	Mix design, FHWA form 1606 Minor Portland Cement Concrete Mix Design Trial Batch Summary	Visual Inspection, see Subsection 601.03 for submittal and reporting requirements				
General	Section 209, forming, reinforcing steel.	Visual inspection	Subsection 601.04	Daily	Installation	24 hrs.
Placing concrete	Section 552.10, form preparation, discharge time limits, vibrating, continuous pour	"	Subsection 601.05	"	"	"
Curing concrete	Curing period, curing methods, finishing exposed surfaces	"	Subsection 601.06	"	"	"
Section 602 Culverts and Drains						
General	Contiguous materials, location, length, Section 209, excavation, backfill	Visual inspection and verification measurements of culvert staking and lift thickness See Section 209 and 152 See Table 153-2 for quality control testing	Subsection 602.03	Daily	Installation	24 hrs.
Laying concrete pipe and precast concrete box culverts	Mortared joints, gasket joints,	Visual inspection	Subsection 602.04	"	"	"
Laying metal pipe	Metal lap joint location, coupling bands	"	Subsection 602.05	"	"	"
Laying plastic pipe	Manufacture's recommendation	"	Subsection 602.06	"	"	"
Laying slotted pipe	Coupling bands, backfill	"	Subsection 602.07	"	"	"
Section 603 Structural Plate Structures						

General	Section 209, excavation, backfill	Visual inspection and verification measurements of culvert staking and lift thickness See Sections 209 and 152 See Table 153-2 for quality control testing	Subsection 603.03	Daily	Installation	End of shift
Erecting	Assembly instructions, fit up, torquing steel bolts, backfilling, manufacturer's representative requirement	Visual inspection and verification measurements nut and bolt torque	Subsection 603.04	"	"	"
Section 604 Manholes, Inlets, and Catch Basins						
General	Section 209, excavation, backfill	Visual inspection and verification measurements of structure staking and lift thickness See Section 209 and 152 See Table 153-2 for quality control testing	Subsection 604.03	Daily	Installation	End of shift
Concrete Construction	Section 601, Subsection , 552.16(a), (b),joining pipes, grouting, gaskets, metal frames, ladder rungs	Visual inspection	Subsection 604.04	"	"	24 hrs.
Grade adjustment of existing structures	Reconstruct existing walls, build up, other devices to adjust grade, cleaning, abandoning	"	Subsection 604.07	"	"	"
Section 605 Underdrains, Sheet Drains, and Pavement Edge Drains						
General	Contiguous materials, location, Section 209, excavation, backfill, geotextiles, outlet pipe	Visual inspection see Section 209 for quality control testing	Subsection 605.03	Daily	Installation	End of shift
Placing underdrain	Granular backfill, coupling, collector pipes, geocomposite underdrain	Visual inspection	Subsection 605.04	"	"	24 hrs.

Placing geocomposite sheet drain	Waterproof membrane, splicing, lapping, backfill Section 208	Visual inspection and verification measurements see Section 208 for quality control testing	Subsection 605.05	"	"	End of shift
Section 606 Corrugated Metal Spillways						
Placing corrugated metal spillways	Placement	Visual inspection	Subsection 606.03	As required	Installation	24 hrs.
Section 607 Cleaning, Reconditioning, and Repairing Existing Drainage Structures						
Reconditioning drainage structures	Liners	Visual inspection	Subsection 607.06	As required	Installation	24 hrs.
Section 609 Curb and Gutter						
General	Section 209, curb foundation	Visual inspection, see Section 209 for quality control testing	Subsection 609.03	As required	Installation	End of shift
Concrete curb or curb and gutter	Section 601, cast in place, joints, slip form	Visual Inspection and see subsection 601.03 (concrete composition) for submittal and reporting requirements	Subsection 609.05	"	"	"
Asphalt concrete curb	Section 402, tack, curb machines	Visual inspection and see subsection 402 for submittal and verification requirements	Subsection 609.06	"	"	"
Section 617 Guardrail						
Posts	Placing posts before paving, short posts, driving posts	Visual inspection and verification measurement for plan dimensions	Subsection 617.03	Daily	Installation	24 hrs.
Rail elements	Steel rail, timber rail, log rail	Visual inspection	Subsection 617.04	"	"	"
Terminal sections	Anchors	"	Subsection 617.05	"	"	"
Section 618 Concrete Barriers and Precast Guardwalls						
Concrete barriers	Cast in place, slip formed, precast,	Visual inspection	Subsection 618.04	Daily	Installation	24 hrs.

Precast concrete guardwall	Fabrication, test section, installation	Visual Inspection and see Subsection 618.05 for submittal and reporting requirements	Subsection 618.05	"	"	"
Section 619 Fences, Gates, and Cattle Guards						
Fences and gates	Clearing, installation of chain link fence and gates, posts, wire fences and gates	Visual inspection	Subsection 619.03	Daily	Installation	24 hrs.
Cattle guards	Excavating and backfilling, concrete foundations, cattle guard, painting	"	Subsection 619.07	"	"	"
Section 620 Stone Masonry						
General	Stone samples, excavation and backfill, Section 209	Visual inspection and lift thickness verification measurements, see Section 209 for quality control testing	Subsection 620.03	Daily	Installation	24 hrs.
Placing stone	Mortar, joints, masonry bed and joint thickness ambient temperature	Visual inspection	Subsection 620.04	"	"	"
Constructing Walls	Sample sections, headers, backing, coping, parapet walls, weep holes	"	Subsection 620.06	"	"	"
Facing for concrete	Stone placed before concrete; concrete placed before stone	"	Subsection 620.07	"	"	"
Arches	Drawings, False work, template, arch centering	Visual inspection and see Section 562 for submittal and reporting requirements	Subsection 620.08	"	"	"
Guardwall	Corewalls, capstones, patterns	Visual inspection	Subsection 620.09	"	"	"
Section 621 Monuments and Markers						

Monuments sand markers	Excavation, placement	Visual inspection and verification measurements, see Sections 152, 209, and 601	Subsection 621.03	Daily	Installation	24 hrs.
Section 624 Topsoil						
Preparing areas	Shaping, disking, scarifying	Visual inspection	Subsection 624.03	Daily	Installation	24 hrs.
Placing topsoil	Notification, ground conditions, spreading, compacting	"	Subsection 624.04	"	"	"
Section 625 Turf Establishment						
Preparing seedbed	Grading, cultivating	Visual inspection	Subsection 625.04	Daily	Installation	24 hrs.
Fertilizing	Dry method, hydraulic method	Visual inspection and verification measurement and documentation of application rates	Subsection 625.06	"	"	"
Seeding	Dry method. Hydraulic method	"	Subsection 625.07	"	"	"
Mulching	Dry method, hydraulic method	"	Subsection 625.08	"	"	"
Section 626 Plants, Trees, Shrubs, Vines, and Groundcovers						
General	Ground conditions, plant conditions	Visual inspection	Subsection 626.03	As required	Installation	24 hrs.
Inspecting and delivery	Notice to the CO, certifications	Visual inspection, submittal and reporting requirements	Subsection 626.04	"	"	"
Protection and temporary storage	Transporting, temporary storage	Visual inspection	Subsection 626.05	"	"	"
Excavation	Excavation, width, depth	"	Subsection 626.06	"	"	"
Setting plants	Plant inspection, backfill,	"	Subsection 626.07	"	"	"
Fertilizing	Mixing, spreading,	"	Subsection 626.08	"	"	"
Watering	Water basins, watering	"	Subsection 626.09	"	"	"

Guying and staking	Location of	"	Subsection 626.10	"	"	"
Pruning	Qualified personnel, painting cuts	"	Subsection 626.11	"	"	"
Mulching	Placement	"	Subsection 626.12	"	"	"
Section 629 Rolled Erosion Control Products and Cellular Confinement Systems						
Erosion control mats	Manufactures recommendation, placement, laps, staples, seeding	Visual inspection	Subsection 629.03	As required	Installation	24 hrs.
Section 633 Permanent Traffic Control						
General	MUTCD, sign list approval,	Visual inspection, submittal requirements	Subsection 633.03	As required	Installation	24 hrs.
Supports	Sign location, post lengths, placing posts, concrete footings	Visual inspection	"	"	"	"
Panels	Retroreflectivity	"	"	"	"	"
Section 634 Permanent Pavement Markings						
General	Location of markings, surface condition, manufacturers recommendation, packaging, shipping,	Visual inspection	Subsection 634.03	As required	Installation	24 hrs.
Waterborne traffic paint	Type B, surface conditions, temperature, application rates, glass bead application rate, number of coats	Visual inspection and verification measurement and documentation of application rates	"	"	"	"
Section 635 Temporary Traffic Control						
Temporary traffic control	See Section 156.08 for temporary traffic control inspection and reporting requirements.					
Section 636 Signal, Lighting, and Electrical Systems						
General	Preconstruction conference, location, trench excavation, coordination with utility companies, bedding, backfill	Visual inspection and see Subsection 636.04 for additional inspection and reporting requirements as performed by others.	Subsection 636.04	As required	Installation	24 hrs.

Conduit	Laying conduit, location, trenching, checking conduit for obstructions, pull wires	"	Subsection 636.05	"	"	"
Section 646 Roadside Development						
Mailboxes	Protection of existing mailboxes, supports, repairing damage, staking locations	Visual inspection	Subsection [INSERT #]	As required	Installation	End of shift

I. ADDITIONAL QUALITY CONTROL REQUIREMENTS

Below is a list of project quality control requirements that have not been included elsewhere in this project quality plan, if any.

Additional Quality Control Requirements as Required by Contract Specifications or Quality Assurance: (with reference to the section amended)

[CompanyName]

Construction

Quality Manual

Operating Policies of the
[CompanyName] Quality System

Approval Signature and Date: _____

[PresidentName], Quality President

QUALITY MANUAL

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PROJECT QUALITY MANAGEMENT

The President forms a team consisting of a Quality Manager, Project Manager, and Superintendent.

First, the Quality Manager assembles a set of project specifications that includes customer specifications and requirements, regulations, industry standards, product instructions, and [CompanyName] quality standards. [CompanyName] operating policies assure compliance to the project specifications.

The Quality Manager evaluates personnel, subcontractors and suppliers, materials, and suppliers, and ensures that only those that are capable and qualified are included on the project. Training is provided to ensure that all personnel involved understand their project Task requirements as well as their quality responsibilities and authorities.

The Quality Manager then details how the quality is controlled throughout the construction process through a listing of all Task inspections and tests that will be performed.

As the project proceeds and prior to starting each construction Task, the Superintendent coordinates detailed quality requirements and resources, working conditions, and communicates them through a meeting with all interested parties. The Superintendent amends Task inspection checklists with items for heightened awareness based on the concerns of all parties.

The subcontractors and suppliers, Superintendent, and Quality Manager use inspection checklists to monitor conformance of each Task to the project specifications before, during, and at completion. Laboratory and functional tests are performed to assure performance results.

Should quality nonconformances occur, they are systematically segregated, controlled and corrected. Improvements are made to prevent recurrences.

Throughout the project, the Quality Manager performs on-site quality audits to ensure that the [CompanyName] Quality System is operating effectively.

1. QUALITY SYSTEM MANAGEMENT AND RESPONSIBILITIES

SYSTEM OF PERSONAL QUALITY ACCOUNTABILITY

1.1. OVERVIEW

Responsibilities for quality are specified not only for compliance with policies and procedures but also so that decisions are based on principles that ensure quality.

Documented responsibilities ensure that expected behaviors are communicated throughout the company rather than left to discretionary interpretation.

1.2. [COMPANYNAME] QUALITY POLICY

Quality is everyone's responsibility. The President holds everyone in the organization personally accountable for adhering to the [CompanyName] Quality System policies and procedures.

The [CompanyName] Quality Policy describes the [CompanyName] commitment to quality and reinforces compliance with the Quality System.

The President communicates the Quality Policy message throughout the company so that all employees understand their respective quality responsibilities.

The President reviews the [CompanyName] Quality Policy with all employees at least annually.

The President ensures that a copy of the [CompanyName] Quality Policy is distributed to all employees and is posted in all offices.

1.3. QUALITY DUTIES, RESPONSIBILITIES, AND AUTHORITY

1.3.1. PRESIDENT: QUALITY DUTIES, RESPONSIBILITIES, AND AUTHORITY

While everyone is responsible for quality, the President is the one person in the company ultimately responsible for quality. Regardless of other duties, quality responsibilities of the President include:

- Ensuring that each employee understands his or her quality responsibilities as well as [CompanyName] quality policies
- Establishing company quality policies and objectives
- Conducting management reviews of the [CompanyName] Quality System
- Ensuring the availability of necessary resources and information for effective operation of the Quality System
- Demonstrating commitment to the [CompanyName] Quality System and its integrity
- Ensuring achievement of [CompanyName] quality objectives
- Continuously improving the Quality System

1.3.2. SENIOR MANAGER: QUALITY DUTIES, RESPONSIBILITIES, AND AUTHORITY

The Senior Manager is responsible for ensuring company-wide effectiveness of the Quality System. Regardless of other duties, the Senior Manager is responsible for:

- Fully implementing all provisions of the [CompanyName] Quality System and related documents.
- Manage the operation of the [CompanyName] Quality System
- Implement and manage all phases of quality control
- Ensuring that the Quality System is established and implemented by persons doing work that impacts quality
- Ensuring that the Quality System is maintained
- Acting as [CompanyName] liaison with parties outside the company on matters relating to quality
- Review and approval of all Quality System documents

1.3.3. Quality Manager: Quality Duties, Responsibilities, and Authority

The Quality Manager is responsible for ensuring the overall effectiveness of the Quality System for a specific project. Regardless of other duties, the Quality Manager is responsible for:

- Planning project quality controls required by the [CompanyName] quality systems and contract requirements
- Fully implementing all provisions of the [CompanyName] Quality System and related documents on the project.
- Manage the operation of the [CompanyName] Quality System on the project.
- Implement and manage all phases of quality control
- Communicating project-specific quality requirements to all affected departments, subcontractors and suppliers, and customers
- Ensuring that the Quality System is established and implemented by persons doing work that impacts quality
- Monitoring progress of activities
- Ensuring that the Quality System is maintained
- Acting as the project quality liaison with parties outside the company on matters relating to quality
- Reporting to senior management on performance of the Quality System, including needed improvements
- Review and approval of all project Quality System records
- Review and approval of project quality-related contract submittals
- Managing all project inspection and quality control activities
- Controlling corrective actions
- Resolving quality nonconformances

The Quality Manager has the authority to:

- Stop work when continuing work may adversely affect quality or cover up a defect
- Prevent the use of equipment or materials that may adversely affect quality or cover up a defect
- To direct the removal and replacement of any non-conforming work, equipment, or material by [CompanyName], any subcontractor, or any supplier.
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure quality results.

Alternate Quality Managers acting in the role of the project Quality Manager has the same quality duties, responsibilities and authority as the project Quality Manager.

1.3.4. Project Manager: Quality Duties, Responsibilities, and Authority

The Project Manager is the one person responsible for management of a specific project. Regardless of other duties, the Project Manager is responsible for:

- Demonstrating commitment to the [CompanyName] Quality System and its integrity

- Ensuring achievement of project quality objectives
- Providing adequate resources for effective operation of the Quality System on the project
- Ensuring that each design employee understands his or her quality responsibilities as well as [CompanyName] quality policies
- Ensuring that each project employee understands his or her quality responsibilities as well as [CompanyName] quality policies
- Conducting management reviews of the [CompanyName] Quality System
- Ensuring the availability of necessary resources and information for effective operation of the [CompanyName] Quality System

The Project Manager has authority to:

- Stop work when continuing work adversely affects quality or covers up a defect
- Prevent the use of equipment or materials that would adversely affect quality or cover up a defect
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure quality results.

1.3.5. Superintendent: Quality Duties, Responsibilities, and Authority

A Superintendent verifies that work performed by subcontractors and suppliers and [CompanyName] work crews conforms to [CompanyName] quality standards. The Senior Manager appoints one or more Superintendents for each project.

A Superintendent has specific responsibilities for:

- Ensuring that work meets government regulatory and code requirements, customer requirements, contract requirements, contract technical specifications, contract drawings, approved contract submittals, and company quality standards and specifications
- Ensuring that subcontractors and suppliers begin work in accordance with [CompanyName] start-work policies
- Ensuring that subcontractors and suppliers receive a notice to work only when conditions will not adversely affect quality results
- Conducting quality inspections, tests, and recording findings
- Accurately assessing subcontractor quality and on-time performance
- Ensuring that quality standards are achieved before approving subcontractor or work crew completion of work

The Superintendent has the authority to:

- Stop work when continuing work may adversely affect quality or cover up a defect
- Prevent the use of equipment or materials that may adversely affect quality
- Direct the removal or replacement of any non-conforming work, equipment, or material
- Suspend work and/or supply of materials as deemed necessary to assure quality results

Alternate Superintendent has the same quality duties, responsibilities and authority as the Superintendent. Multiple Superintendents may be assigned to the project.

1.3.6. All Employees: Quality Duties, Responsibilities, and Authority

All employees have quality responsibilities that include:

- Conformance to project quality requirements
- Compliance with the project quality plan

- Meeting or exceeding all applicable regulations, codes, industry standards, and manufacturer specifications as well as meeting or exceeding our customers' contract and individual requirements.
- Fully implementing and complying with all provisions of the [CompanyName] Quality Manual.

All employees have the authority to:

- Stop work when continuing work may adversely affect quality or cover up a defect
- Prevent the use of equipment or materials that may adversely affect quality

1.4. Quality System Performance Measures

Company-wide quality performance measures evaluate the effectiveness of the Quality System. The following indicators are the primary measures of quality performance:

- Number of customer correction items identified at the project closeout quality inspection
- Customer satisfaction feedback

At least annually, Senior Manager(s) evaluate [CompanyName] quality performance and set improvement goals.

1.5. Customer Satisfaction Performance Measures

[CompanyName] obtains feedback after project completion on whether customer quality expectations are being met, and to what extent. The Senior Manager analyzes customer satisfaction data to determine opportunities for improvement and address any items of customer dissatisfaction.

1.6. Exceptions

Exceptions to the [CompanyName] Quality System and customer contract requirements are tightly controlled:

- Exceptions to compliance to contract specifications are approved only by the customer and the Quality Manager.
- Exceptions to the [CompanyName] Quality System not specified by contract requirements are approved only by Senior Manager or the Quality Manager.

Exceptions are recorded in memoranda, change orders (Section 3.4.6 Change Order), or otherwise clearly documented.

2. PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN

2.1. OVERVIEW

After [CompanyName] is awarded a contract to carry out a construction project, the Senior Manager forms a team consisting of a Quality Manager, Project Manager, and Superintendent.

First, the Quality Manager develops a set of project specifications that align project requirements with customer specifications and requirements, regulations, industry standards, product instructions, and [CompanyName] quality standards.

The Quality Manager evaluates personnel, subcontractors and suppliers, materials, and suppliers, and ensures that only those that are capable and qualified are included on the project. Training is provided to ensure that all personnel involved in the project understand their quality responsibilities and authorities.

The Quality Manager then details how the quality is controlled throughout the construction process through a quality inspection and test plan that specifies requirements and pass/fail criteria for quality inspections and tests. [CompanyName] operating policies assure compliance to the project specifications.

As the project proceeds and prior to starting each construction task, the Superintendent coordinates detailed requirements and resources, site conditions, and communicates them through a meeting with all interested parties. The Superintendent amends inspection specific checklists with items for heightened awareness based on the concerns of all parties.

The subcontractors and suppliers and Superintendent use the quality inspection forms to monitor execution of the construction process through a series of quality inspections before, during, and at the completion of each construction task. Laboratory and functional tests are performed to assure performance results.

Should nonconformances occur, they are systematically controlled and corrected. Improvements are made to prevent recurrences.

Throughout the project there are standard operating procedures and forms for creating, maintaining, and controlling quality documents and records.

Throughout the project, the Quality Manager performs on-site quality audits to ensure that the [CompanyName] Quality System is operating effectively.

2.2. [COMPANYNAME] PROJECT LICENSE AND QUALIFICATION REQUIREMENTS

The Quality Manager identifies company license and qualification credentials required by contract specifications and government regulators. The Quality Manager obtains records, certificates, and license records that provide verification of [CompanyName] credentials.

2.2.1.1. REQUIRED COMPANY LICENSES AND CERTIFICATIONS

The Quality Manager defines quality-related company credentials for each project Task that affects quality.

2.3. PROJECT PERSONNEL AND QUALIFICATIONS

2.3.1. PROJECT ORGANIZATION CHART

The Senior Manager defines the organization chart for the project. The organizational chart includes job titles, names of assigned personnel, and organizational and administrative interfaces with the customer. The organization chart defines lines of authority as indicated by solid connection; dotted lines indicate lines of communication. The lines of authority preserve independence of quality control personnel from the pressures of production.

The Senior Manager assesses the qualification requirements for each position on the project organization chart, qualifications of each person, and then appoints only qualified persons to the project organization.

2.3.2. APPOINTMENT OF KEY PROJECT PERSONNEL

The Senior Manager forms a project management team consisting of:

- A Quality Manager
- A Project Manager
- A Superintendent
- A Quality Manager (if required)

The Senior Manager appoints qualified persons to each project management job position with specific quality responsibilities and authorities. The Senior Manager assesses the qualifications of each person before the appointment is made.

The Senior Manager keeps a record of the appointment and signs the document. The person accepts the appointment by signing a declaration as a competent person.

Work steps for maintaining appointment of key project personnel are specified in Standard Operating Procedure 2.3.2 Appointment of Key Project Personnel.

2.3.3. PERSONNEL QUALIFICATIONS

The Quality Manager qualifies employee capabilities to ensure that they are capable of completely carrying out their assigned quality responsibilities including the following capabilities:

- Knowledge of Company quality standards
- Knowledge of job responsibilities and authority
- Demonstrated skills and knowledge
- Demonstrated ability
- Demonstrated results
- Required training
- Required experience

The Quality Manager also evaluates independent contractor personnel on the same standards that apply to employees.

2.3.3.1. REQUIRED LICENSES AND CERTIFICATIONS

The Quality Manager defines quality-related credentials for each project job position that affects quality.

2.4. PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN

Before project work begins, the Project Manager prepares a construction process plan that defines the sequence of each Task and related quality inspections. The construction process plan is documented through an integrated and coordinated set of documents that includes:

- A schedule consisting of a sequence of each Task and activities required to complete a project
- The customer contract (Section 3 Contract Specifications) including contract technical specifications and contract drawings
- Required quality inspections and tests (Section 8.2 Required Task Quality Inspections and Tests) and the project Quality Inspection and Test Plan when required
- The Contract Submittal Schedule (Section 3.4.1 Contract Submittal Schedule)

2.5. Identification of Quality Controlled Tasks

The Quality Manager identifies each phase of construction Task that requires separate quality controls. Each Task triggers a set of requirements for quality control inspections before, during and after Tasks.

2.6. Project Quality 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 customer quality inspection
- Specification requirements for each quality inspection and test

2.7. Project Quality Communications Plan

After [CompanyName] is awarded a contract, the Project Manager plans the methods of communications among the customer, subcontractors and suppliers and [CompanyName].

2.8. Project Quality Training Plan

The Quality Manager ensures that all employees receive training relevant to their quality responsibilities.

The Quality Manager ensures that all subcontractors and suppliers receive training on relevant elements of the [CompanyName] Quality System, Project Quality Assurance/Quality Control Plan, and quality standards.

The Quality Manger identifies the training needs of all personnel performing activities that affect quality. Training topics may include:

- The [CompanyName] Quality System
- The [CompanyName] Quality Policy
- Operating policies identified in the Quality Manual
- Quality standards cited in the Quality Manual, or project documents, or records
- Relevant quality standard operating procedures

2.9. Customer Training On Operation and Maintenance

During the project closeout phase, the Quality Manager trains customers on the operation and maintenance of the completed project, including as applicable:

- A review of as-built drawings
- Installed product identification and warranty requirements
- A review of documentation regarding start-up, operation, and shutdown
- Normal adjustments and maintenance requirements
- Limitations on use

2.10. PROJECT RECORDS AND DOCUMENTATION PLAN

The Quality Manager identifies the quality records that will be maintained during the planning and execution of the project. Considerations include:

- Contract requirements for maintaining records
- The size of the project
- Types of activities
- The complexity of processes and their interactions
- The competence of personnel
- The duration of the project
- The need to demonstrate completion of work
- The need to demonstrate due diligence for quality system related activities
- Balancing the cost and benefits of maintaining the record

2.11. PROJECT AUDIT PLAN

The Quality Manager identifies the frequency of project quality audit that will be conducted during the project and the job position that will conduct the audits. Considerations include:

- The size of the project
- The complexity of processes and their interactions
- The duration of the project

3. CONTRACT SPECIFICATIONS

DEFINE CUSTOMER QUALITY EXPECTATIONS

3.1. OVERVIEW

Fulfilling customer contract expectations is a primary objective of the [CompanyName] Quality System. To ensure that customer expectations will be fulfilled, [CompanyName] clearly defines the requirements for each contract before it is approved.

The Project Manager ensures that the information in customer contracts clearly defines customer expectations and that the necessary details are provided to set requirements for construction.

3.2. CONTRACT TECHNICAL SPECIFICATIONS

The Project Manager obtains contract technical specifications from the customer.

For each specific contract, The Senior Manager identifies supplemental technical specifications on the Project Quality Assurance/Quality Control Plan when they are not otherwise specified by the contract or the approved drawings. Superintendents have jobsite access to contract technical specifications for the construction activities they supervise.

All [CompanyName] activities comply with the contract technical specifications.

3.3. CONTRACT DRAWINGS

The Project Manager obtains customer supplied drawings that have been approved by local government regulators. Superintendents have jobsite access to approved architectural drawings for the construction they supervise.

All [CompanyName] activities comply with the drawing details and specifications cited in the drawings.

3.3.1.1. AS-BUILT RED-LINE DRAWINGS

As the project progresses, the Superintendent will mark the original design drawings to indicate as-built conditions including changes to specified materials, dimensions, locations, or other features.

3.4. CONTRACT SUBMITTALS

The Quality Manager prepares submittals that provide additional details of how [CompanyName] plans to carry out quality-related aspects of the customer contract, contract technical specifications, and contract drawings and reporting of quality records to the customer.

The Quality Manager lists, schedules, and approves all quality-related submittals that are required by the project including submittals prepared by subcontractors and suppliers. The Quality Manager must review all submittals for compliance with the requirements of the [CompanyName] Quality System. The Quality Manager must sign approval of each contract submittal.

[CompanyName] extends compliance to contract specifications to all customer approved submittals. All [CompanyName] activities comply with customer approved submittals.

3.4.1. CONTRACT SUBMITTAL SCHEDULE

The Project Manager identifies submittals that apply to a specific contract and when they should be submitted, including:

- Contract requirement reference (if applicable)
- Submittal type: Shop drawing, product data, quality inspection and test plan, request for information, or allowances and unit prices
- Description
- Due date for submission to customer by [CompanyName]
- Due date for approval by the customer. Due dates may be a number of days after a project plan milestone.
- Approval date

3.4.2. SHOP DRAWING SUBMITTALS

The Project Manager or Purchasing and Estimating Manager prepare shop drawing submittals that supplement contract drawings. Shop drawings are required when additional details are necessary for fabrication or installation. The following information is included, as applicable:

- Dimensions established by field measurement
- Relationships to adjoining construction
- Identification of products and materials
- Fabrication and installation drawings
- Diagrams showing locations of field-installations
- Shop fabricated manufacturing instructions
- Templates and patterns
- Design calculations
- Compliance with specified standards
- Seal and signature of professional engineer if required
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

[CompanyName] extends contract specifications to include customer approved shop drawings.

3.4.3. PRODUCT DATA SUBMITTALS

The Project Manager prepares product data submittals that consist of the manufacturer's product information. The information included in this submittal is:

- Manufacturer, trade name, model or type number
- Description
- Intended use
- Size and physical characteristics including drawings when applicable
- Finish and color characteristics
- Product manufacturer's installation instructions, when applicable
- Additional requirements as specified in the contract, contract technical requirements, or contract drawings.

3.4.4. ALLOWANCES AND UNIT PRICES SUBMITTALS

When customer contracts specify allowances and unit prices that the customer will select after the contract is awarded, the Project Manager prepares an allowance and unit price submittal for customer approval.

When a customer selects or approves an allowances and unit prices, the customer indicates the allowance and unit price selection on the signed submission return.

[CompanyName] extends compliance to contract specifications to customer approved allowances and unit prices.

3.4.5. Request for Information (RFI) Submittals

The Project Manager submits a request for additional information to the customer when errors are found or when required information is not contained in the contract, contract technical specifications, or contract drawings.

Should any number of contract technical specifications or contract drawings result in conflicting requirements, the Quality Manager submits a request for information to the customer to select the standard that applies.

[CompanyName] extends compliance to contract specifications to customer requests for information.

3.4.6. Change Order Submittals

Contract requirements or contract technical specifications may require a change after the contract is awarded. The Project Manager submits the change order to the customer for approval, including any contract price adjustments.

When a customer approves a change order, the customer signs the submission return.

[CompanyName] extends contract specifications to include customer approved change orders.

3.4.7. Mock-up Submittals

The Superintendent prepares mock-up submittals as required by contract. Additionally, the Quality Manager specifies mock-up requirements when they are necessary to ensures customer expectations are clearly identified.

The Quality Manager ensures that each mock-up demonstrates specific elements of form and/or function, and that they are specified in the submittal documents.

[CompanyName] extends contract specifications to include customer approved mock-up submittals.

3.5. Customer Submittal Approval

The Project Manager obtains the signature of an authorized customer representative on the submittal form.

[CompanyName] extends compliance to contract specifications to customer approved submittals.

Work in the affected area of a pending submittal requirement does not start until the customer approves the submittal.

3.6. Contract Warranty

The Project Manager ensures that customer contracts clearly specify warranty coverage including:

- Scope
- Starting date
- Duration

The Project Manager ensures that customer contracts also clearly specify owner responsibility for:

- Restrictions of use
- Maintenance requirements
- Exclusions for customer supplied materials or equipment
- Timely notification of problems

3.7. CONTRACT REVIEW AND APPROVAL

The Senior Manager conducts customer contract reviews to ensure that:

- Customer requirements and specifications are complete
- Customer requirements and specifications are compatible with the relevant regulations, [CompanyName] quality standards, and Quality System requirements
- [CompanyName] has the capability to deliver the completed project in the time allotted

Before construction begins, the Senior Manager makes sure that all contract requirements are clearly understood, all discrepancies are resolved, and all requirements are agreed upon. Once these requirements are met, the Senior Manager signs the contract.

7. PROCESS CONTROLS

HOW WORK IS CARRIED OUT

7.1. OVERVIEW

The construction process plan defines how project work is to be done and approved for the overall project. The construction process plan is communicated to all key personnel, subcontractors and suppliers in a startup meeting. As the project proceeds, Task plans provide additional details of how each individual Task is carried out. Tasks planning meetings are used to communicate expectations of the Task plan to key personnel responsible for carrying out the Task.

7.2. PROJECT STARTUP AND QUALITY CONTROL COORDINATION MEETING

Prior to the commencement of work, the Project Manager holds a meeting to discuss and coordinate how project work will be performed and controlled. Key personnel from [CompanyName], subcontractors and suppliers meet to review expectations for project quality results as well as quality assurance and quality control policies and procedures including:

- Key requirements of the project
- The Project Quality Assurance/Quality Control Plan
- Required quality inspections and tests
- The project submittal schedule
- Quality policies and heightened awareness of critical quality requirements
- Project organization chart and job responsibilities
- Methods of communication and contact information
- Location of project documents and records

7.3. PREPARATORY PROJECT QUALITY ASSURANCE/QUALITY CONTROL PLAN PLANNING

7.3.1. TASK REQUIREMENTS REVIEW

In preparation for the start of an upcoming Task, the Superintendent reviews an integrated and coordinated set of documents that collectively define quality requirements for the Task including:

- Objectives and acceptance criteria of the Task
- Quality standards that apply to the Task
- Work instructions, process steps, and product installation instructions that apply to the Task
- Shop drawings
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work
- Required records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements
- Required quality inspections and tests
- Method for clearly marking nonconformances to prevent inadvertent use
- Location of quality system records and documents
- Personnel training

7.3.2. Preparatory Site Inspection

The Superintendent also performs a quality inspection of the work area and:

- Assesses completion of required prior work
- Verifies field measurements
- Assures availability and receiving quality inspection status of required materials
- Identifies any nonconformances to the requirements for the Task to begin
- Identifies potential problems

7.3.3. Task Preparatory Quality Planning Meetings

Prior to the start of a Task, the Superintendent conducts a meeting with key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

During the meeting, the Superintendent communicates the Task quality requirements and reinforces heightened awareness for critical requirements. Topics for a Task quality plan meeting include:

- Conflicts that need resolution
- Required quality documents and a verification of availability to personnel carrying out, supervising, or inspecting the Task
- Record keeping requirements and the availability of necessary forms
- Review methods and sequences of installation
- Special details and conditions
- Standards of workmanship
- Heightened awareness of critical quality requirements
- Quality risks
- Tasks quality inspection form

7.4. Weekly Quality Planning and Coordination Meetings

The Superintendent conducts a meeting with key company, subcontractor and supplier personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

The meeting is held on a nominal weekly schedule. During the meeting, the Superintendent facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Superintendent maintains a record of the meeting event on the Daily Quality Control Report.

7.5. Process Control Standards

7.5.1. Job-ready Start Work Standards

Work on a Task starts only when conditions do not adversely impact quality, comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

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

7.5.2. Work in Process Standards

Work is conducted only when conditions do not adversely impact quality, comply with government regulations, contract technical specifications, industry standards, or product installation instructions.

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

7.5.3. Protection of Completed Work Standards

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.

7.5.4. Material storage

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

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

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

The Superintendent surveys stored materials during daily jobsite reviews and identifies any material that have incurred damage or otherwise become defective and therefore unfit for use.

7.5.5. Controlled Use of Materials

The Project Manager ensures that contracts and purchase orders are awarded only to outside organizations qualified to perform the Task and/or supply materials as required for the specific project.

Only approved materials are used in the construction process. Only approved materials are specified in purchase and/or subcontracts.

Materials that are defective, deteriorated, damaged, or not approved are not used. The Superintendent clearly marks such materials for non-use or otherwise holds them aside.

When customer-supplied materials are lost, damaged, or otherwise found unsuitable for use, the Superintendent reports such findings to the customer.

When subcontractor–supplied materials are damaged or otherwise found unsuitable for use, the Superintendent reports such findings to the subcontractor.

The Superintendent ensures that construction uses only materials specified in the contract technical specifications, contract drawings, and approved submittals. Substitutions are made only by agreement of the customer and documented by a change order (see section 2.1.3.6).

7.5.5.1. Controlled Product Use and Installation

[CompanyName] construction activities conform to manufacturers' product use and installation instructions that apply to the construction process.

When installing a product, the Superintendent has access to all applicable product installation instructions.

7.6. Daily Quality Control Report

The Superintendent records a summary of daily work activities. The report will include:

- Schedule Activities Completed
- General description of work activities in progress.
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Supplier and Company Crews on site
- Visitors and purpose
- General Remarks
- Improvement Ideas
- Weather conditions

7.7. MONTHLY QUALITY CONTROL REPORT

When a monthly quality control report is required by the Project Quality Plan, the Superintendent records a monthly status report. The report includes:

- A summary of work completed and work in progress
- Outstanding issues
- Issues resolved during the reporting period
- Outstanding potential change orders
- Project status with current project costs and estimated completion date
- A cost analysis summarizing actual costs to date and estimated future costs
- Project pictures as appropriate

9. NONCONFORMANCES AND CORRECTIVE ACTIONS

9.1. OVERVIEW

Should a nonconformance be identified by an inspection there is a systematic method to control the item, correct it, and ensure that project quality is not adversely impacted by the event.

A nonconformance is any item that does not meet project specifications or [CompanyName] Quality System requirements.

9.2. NONCONFORMANCES

9.2.1. MARKING OF NONCONFORMANCES AND OBSERVATIONS

When the Quality Manager, Superintendent, inspector, or customer identifies a nonconformance or an observation, the item is quickly and clearly marked by tape, tag, or other easily observable signal to prevent inadvertent cover-up.

9.2.2. CONTROL THE CONTINUATION OF WORK

After the item is marked, the Superintendent determines if work can continue in the affected area:

CONTINUE WORK: When continuing work does not adversely affect quality or hide the defect, work may continue in the affected area while the disposition of the item is resolved. The Superintendent may place limitations on the continuation of work.

STOP WORK ORDER: When continuing work can adversely affect quality or hide the defect, work must stop in the affected area until the disposition of the item resolved. The Superintendent identifies the limits of the affected area. The Superintendent quickly and clearly identifies the boundaries of the stop work area.

9.2.3. NONCONFORMANCE REPORT

9.2.3.1. RECORDING OF NONCONFORMANCES

If nonconformances or observed items exist by the Task completion inspection, the Superintendent or inspector records the nonconformances on a nonconformance report.

The Superintendent sends the nonconformance report to the Quality Manager.

9.2.3.2. QUALITY MANAGER DISPOSITION OF NONCONFORMANCE REPORTS

When the Quality Manager receives a Nonconformance Report, he or she assesses the affect the reported nonconformance has on form, fit, and function. The Quality Manager may assign a disposition of either:

REPLACE: The nonconformance can be brought into conformance with the original specification requirements by replacing the nonconforming item with a conforming item.

REPAIR: The nonconformance can be brought into conformance with the original requirements through completion of required repair operations.

REWORK: The nonconformance can be made acceptable for its intended use, even though it is not restored to a condition that meets all specification requirements. The Quality Manager may specify

standards that apply to the completion of rework. Rework nonconformances must be approved by the customer.

USE AS-IS: When the nonconforming item is satisfactory for its intended use. Any use as-is items that do not meet all specification requirements must be approved by the customer.

9.2.4. Correction of Nonconformances

The Superintendent verifies that corrective actions eliminate the nonconformance to the requirements of the original specifications or as instructed by the disposition of the nonconformance report, and then removes, obliterates, or covers the nonconformance marker.

Furthermore, the Superintendent ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences (see section 9.3 Corrective Actions).

9.3. Corrective Actions

9.3.1. Control of Corrective Actions

When a nonconformance is found, the Superintendent ensures that:

- Previously completed work is reinspected for similar nonconformances
- Corrective actions are taken to avert future occurrences

The Quality Manager identifies requirements for corrective actions with respect to frequency, severity, and detectability of quality nonconformances items found during and after completion of work activities.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

9.3.2. Corrective Action Training

The Superintendent initiates corrective action training to address quality nonconformances. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

Heightened awareness during quality inspections verifies and documents compliance with the corrective action improvement items. A qualified Superintendent inspects corrective actions during regular quality inspections and records observations on the quality inspection form.

The Superintendent notifies affected subcontractors and suppliers of selected preventive action training requirements.

The Superintendent evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the Quality Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.

10. PREVENTIVE ACTIONS

PREVENT NONCONFORMANCES

10.1. OVERVIEW

Fixing problems found during quality inspections is not sufficient. Systematic prevention of recurrences is essential for improving quality.

[CompanyName] makes changes to solve the problem. Solutions may involve a combination of enhanced process controls, training, upgrade personnel qualifications, improved processes, or use of higher-grade materials.

Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

10.2. IDENTIFY PREVENTIVE ACTIONS FOR IMPROVEMENT

The Quality Manager identifies preventive action improvement priorities with respect to frequency, severity, and detectability of quality correction items found during and after completion of work activities. The Quality Manager also reviews company quality performance and customer feedback.

More specifically, the Quality Manager assesses:

- Customer corrective items
- Superintendent quality inspection results
- Code official inspection results
- Post-construction service
- Management field reviews
- Annual system review
- Customer satisfaction surveys

The Quality Manager documents quality items requiring preventive action improvement.

The Quality Manager leads the company in finding solutions to address the causes of problems.

When a solution requires changes to [CompanyName] quality standards, the Quality Manager makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor and Supplier qualifications
- Company standards
- Inspection processes

10.3. TRAIN PREVENTIVE ACTIONS FOR IMPROVEMENT

The Quality Manager initiates preventive action training to address quality improvement items. Personnel and subcontractors and suppliers performing or inspecting work participate in the training.

Heightened awareness during quality inspections verifies and documents compliance with the preventive action improvement items. A qualified Superintendent inspects hotspots during regular quality inspections and records observations on the quality inspection form.

The Quality Manager notifies affected subcontractors and suppliers of selected preventive action training requirements.

The Quality Manager evaluates the effectiveness of the improvements. The Quality Manager reviews improvement results recorded on quality inspection records and monthly field reviews. When the Quality Manager determines that the improvement actions are effective, the item is no longer treated as a preventive action.