

CITY OF FORT COLLINS

QUALITY ASSURANCE / QUALITY CONTROL

PLAN

QA-QC Outline

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THE QUALITY CONTROL ORGANIZATION

The quality control organization consists of City of Fort Collins Project Manager and he is responsible for ensuring the project team is fulfilling the requirements of the QA-QC program as set forth in the Specification Section 01 45 01.

A. Design Phase

The Facilities Project Manager will require each member of the design team to review the City's Design Standards and sign off stating they will design facilities accordingly.

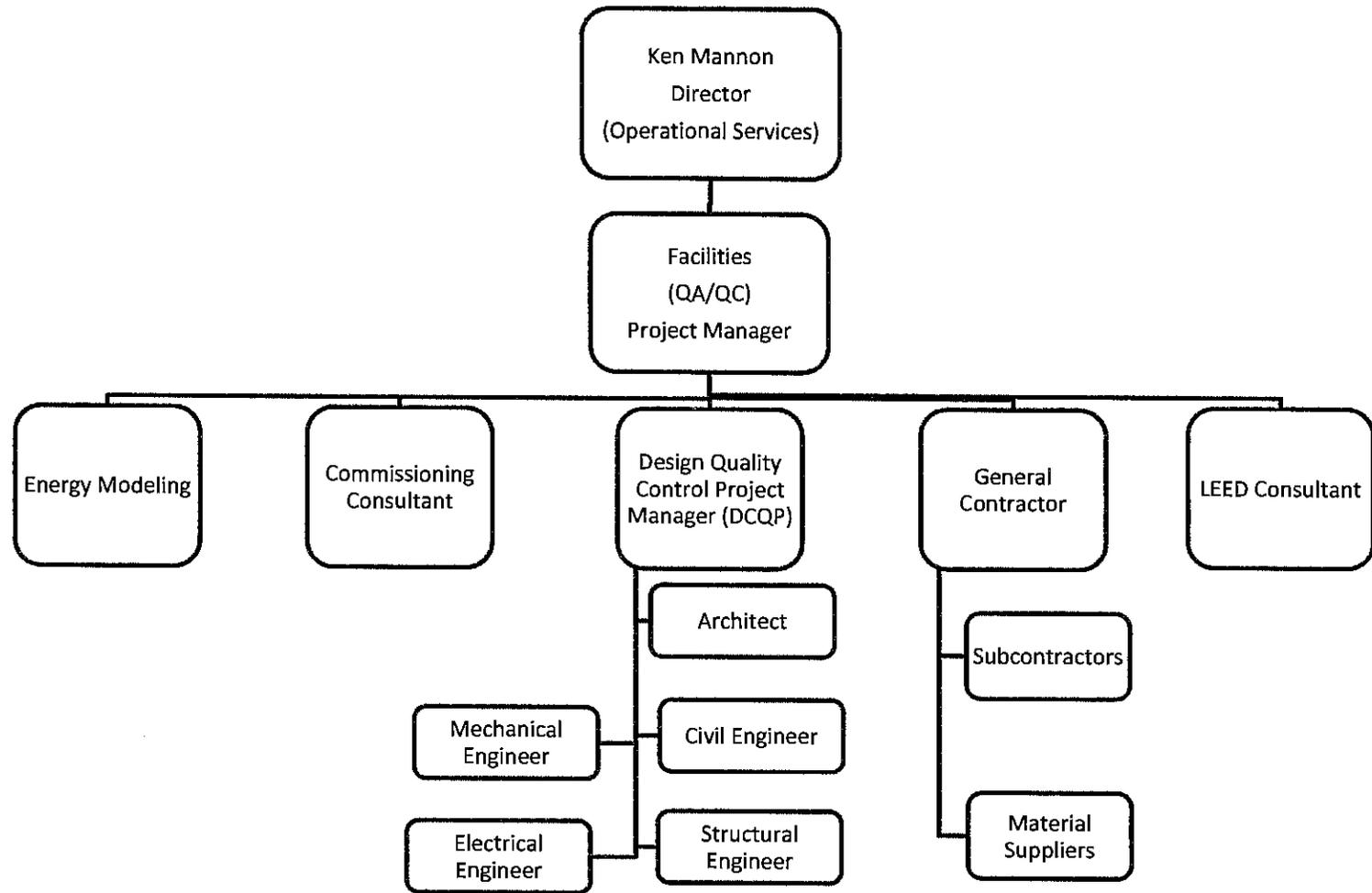
The Facilities Project Manager will review the procurement documents at 30%, 70% and 95% along with others he may have assist with the review to verify the design team has a design that is using materials of top quality and the details necessary to ensure the systems can be constructed correctly.

B. Construction Phase

The Facilities Project Manager will require the onsite project team and each of the trade foremen to participate in the three-phase QA-QC control system, and to provide daily reporting activities as they relate to the QA-QC and Safety programs. The General Contractor will be responsible for the input, tracking, and verification of the information provided by the trade foremen.

The General Contractor's staff will take a team approach to managing and tracking the three-phase control system. However, overall responsibility for organizing and managing the system is the responsibility of their QA-QC System Manager who will use input and assistance from other staff as needed.

An organizational chart is attached that graphically details the relationships and lines of authority for the QA-QC organization. Additional staff may be added or subcontracted as necessary to properly manage the program. The QA-QC plan will be updated accordingly with any changes as they become necessary.



Project QA/QC Organizational Chart

RESPONSIBILITIES OF QA-QC PERSONNEL

The following personnel are assigned a QA-QC function. The duties, responsibilities, and authorities they have as related to the QA-QC functions are as summarized below in the bulleted lists.

A. Facilities Project Manager

- Assure Design Team has reviewed the City's Design Standards
- Assure the Design Team is using BIM to prevent system interferences
- Confirm a design Charrette has been performed and the design team has a clear direction.
- Assure the lead Designer has reviewed the drawings at 30%, 70% and 95% to confirm the systems and details will provide a quality end product.
- Has reviewed the design documents at 30%, 70% and 95% to assure the design team is providing the systems and details necessary.
- Has provided purchasing the narrative and other information necessary to issue complete procurement documents.
- Has reviewed the procurement documents to assure they are clear, concise, and correct and complete prior to being issued.

B. Design Quality Control Project Manager (DQCP)

- The DQCP shall be a registered Architect or Engineer, with a minimum of ten years overall designer experience (including PM experience) and a minimum of two years Design PM experience.
- Assure that each discipline of the design team has reviewed and understands the city's design standards.
- Coordinate the design Charrette and document the key points the participants want to be included.
- Coordinate the review of the design documents at 30%, 70% and 95% and get the Owner sign-off prior to proceeding on.
- All documents shall be technically reviewed by competent, independent reviewers. The same element that produced the product shall not perform the independent technical review (ITR).
- Coordinate AHJ document review and integration of design.
- Coordinate Final procurement documents with the Owner.
- Help Coordinate building permit application process.
- Coordinate design questions during procurement of the project and issuing of addendums.

- Responsible for participation in and accountability for meeting the requirements set forth in the Safety and Health Program.
- On a daily basis, provide accurate information regarding the progress of work, including information that describes the tradesman, materials, and equipment used to complete each definable feature of work.
- Make timely corrections of any deficiencies and punchlist items as determined and directed by the QC staff.
- Update and maintain the GC's As-Built set on a weekly basis.
- Help coordinate, planning, and scheduling of necessary testing and inspections of the work.

Quality Assurance / Quality Control

This packet contains:

- Project Plan Checklist
- Quality Manager Appointment Form.

Project Quality Plan Checklist

Version December 6, 2012

Project ID	Project Name	Preparer	Date
[Project Number]	[Project Name]		

- Project organization chart
- Facilities Quality Assurance/ Quality Control Project Manager appointment
- Design Quality Assurance/Quality Control Project Manager appointment
- Project Selection of General Contractor
- Duties, Responsibilities, and Authority of Quality Personnel Assigned
- Project Regulatory codes and standards
- Local Authorities and Jurisdictions
- Project Material and equipment specifications
- Identification of Project QA/QC Manager for General Contractor
- Identification of Quality Control Tasks (Definable Feature of Work):
- Project Submittals Schedule
- Project Inspection and test plan Requirements
- Project Preparatory, Initial and Follow Up Checklist
- Project Quality Records and Document Logs
- Project Control of nonconformance items
- Project O&M Manuals
- Owner Staff Orientation and Training
- Project Warranty Documents

City of Fort Collins Quality Manager Appointment

Version December 6, 2012

Project ID	[Project Number]
Project Name	[Project Name]
Appointed Quality Manager	[Quality Manager Name]

Please be advised that you are hereby appointed as Quality Manager for the above referenced project. Your responsibilities include managing and implementing the Caldeira Construction Quality System and the Project Quality Plan regarding the referenced project.

I assign you responsible for:

- Fully implementing all provisions of the City of Fort Collins Quality System and related documents
- Ensuring company-wide effectiveness of the Quality System
- Ensuring that the Quality System is established and implemented by persons doing work that impacts quality
- Ensuring that the Quality System is maintained
- Ensuring company-wide conformance to Quality System requirements
- Acting as City of Fort Collins 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 Quality System documents
- Review and approval of all Quality System records
- Review and approval of quality-related contract submittals
- Managing all project inspection and quality control activities

I grant you unrestricted authority for carrying out the above responsibilities including:

- Stopping work when continuing work adversely affects quality or cover up a defect
- Prevent the use of materials that would adversely affect quality or cover up a defect
- To direct the removal and replacement of any non-conforming work or material by General Contractor, any subcontractor, or any supplier
- Suspend work and/or supply of materials by any staff member, general contractor, subcontractor personnel, or supplier as deemed necessary to assure quality results.

Department supervisor signature and date: _____

SECTION 01 45 04.10 06

QUALITY ASSURANCE / QUALITY CONTROL

PART 1 GENERAL

1.1 Requirements

- A. This specification covers requirements for Contractor Quality Assurance and Quality Control for Design-Bid-Build, Design-Build and Construction Management projects.
- B. Related requirements specified elsewhere
 - 1. Section ????? LEED Requirements
 - 2. Section ????? Commissioning Requirements
 - 3. Section ????? Submittals
 - 4. Section ????? Materials and Equipment

1.2 Quality Assurance/Quality Control

The purpose of this section is to ensure there is a system in place to ensure the end product is of top quality and it will provide the Owner with the desired life expectancy for the completed facility.

This shall be achieved by having a design that has selected the correct products along with the proper details for installation. The installation shall then be completed by certified craftsman under the right conditions and then followed up by having these products or systems tested or verified they will perform as designed.

1.3 SUBMITTALS

"Approval" or "Reviewed and in compliance" stamp is required for all submittals noted in the specifications.

SUBMITTAL PROCEDURES:

The contractor is responsible for putting together a submittal log listing each specification section and the required submittals along with the following:

- 1. Date anticipate item to be submitted
- 2. Date anticipate approval
- 3. Date item to be ordered
- 4. Anticipated lead time for delivery
- 5. Date item is to be installed

The contractor is responsible for anticipating the proper review time of each submittal and working with his subcontractors and suppliers to coordinate their submittal items or systems, review each one for compliance and forward for approval in line with the submittal log and project schedule so as not to delay or impact the sequence or completion date. The contractor is to keep the submittal log up to date and share any critical information with the project team.

Preconstruction Submittals:

The contractor is responsible for putting together the required submittals which need to be submitted and approved prior to start of construction. The following items are to be submitted as a minimum.

1. Project subcontractor/supplier list
2. Stormwater Site Binder
3. Submittal Log
4. Construction Schedule
5. Schedule of Values for Payment Application
6. Construction Quality Control(CQC) Plan and Procedures

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1.1 A. Project Design:

1. The design team shall review and follow the City's Design Standards.
2. All materials and systems designed shall be compatible with adjoining materials and conditions for which they are expected to perform.
3. All documents shall be technically reviewed by competent, independent reviewers. The same element that produced the product shall not perform the independent technical review (ITR).
4. Coordinate AHJ document review and integration with design.
5. Design all underground piping systems, joints, couplings, valves, vaults and other appurtenances to function under all conditions of load to be encountered at the project site.
6. Design equipment for operation at an elevation of 4,900 feet above sea level.
7. Coordinate details of the equipment with other related parts of the work.
8. Design equipment to operate under all conditions of load without objectionable sound for vibration.

B. Manufacturers:

1. Where two or more units of the same class of fixture or equipment are required, these shall be products of a single manufacturer.
2. Provide a permanent operational nameplate on each items of power operated equipment indicating the manufacturer, product name, model number, serial number, speed, capacity, power characteristics and locate in easily read location.

3.1.2 CONTRACTOR'S CONSTRUCTION QUALITY CONTROL (CQC)

The Contractor shall furnish for review and approval, not later than 14 days after receipt of notice to proceed, the required preconstruction submittals.

The Contractor Construction Quality Control Plan is to implement the quality control requirements of this specification. The plan shall identify personnel, procedures, control, instructions, and definable features of work, tests, records, and other forms to be used. The Contractor is responsible for the quality control and shall establish and maintain an effective quality control system. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract documents. The system shall cover design and construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the jobsite and is subject to removal by the Owner's Project Manager for non-compliance with the quality

requirements specified. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times when construction activities are taking place, and shall be responsible for all construction related activities at the site and coordinating the delivery of necessary materials and systems.

The Contractor's CQC Manager shall have a minimum of 10 years construction experience and maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure compliance with contract documents. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC system. Complete records of all letters, material submittals, shop drawing submittals, product samples, schedules and all other project documentation shall be stored at the project site using an organized system. These documents and records shall be made available to the Owner's Project Manager if requested.

The Contractor's CQC Manager shall implement a Quality Assurance/Quality Control plan and tracking system to ensure the proper materials, systems and procedures are being installed as per contract documents and the City of Fort Collins Quality Assurance/Quality Control Plan. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work. www.fcgov.com/projectqualitycontrol

3.2 Definable feature of work

A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the submittal process.

3.3 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. The project team shall be notified a minimum of 48 hours prior to conducting the preparatory phase for any trade contractor. This phase shall include a meeting conducted by the CQC Manager and the project superintendent to instruct expectations to the foreman and applicable workers responsible for the definable feature as the acceptable level of workmanship required to meet the requirements of the contract documents. The results of the preparatory phase meeting shall be documented by minutes prepared by the CQC Manager and attached to the contractor's daily report. This phase shall include:

- A. Review each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- B. A review of the contract drawings
- C. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- D. Review of provisions that have been made to provide required control inspection and testing.

- E. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- F. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- G. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- H. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- I. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Owner's Project Manager
- J. Resolve all differences.
- K. The Owner and A/E shall be notified at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the contractor's daily report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.4 Initial Phase

This phase shall be accomplished at the early stage of a definable feature of work. There should be enough of the system installed to get an idea of the finished product. The following shall be accomplished:

- A.** Check the work in place to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- B.** Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- C.** Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- D.** Resolve all differences
- E.** Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with the workers.
- F.** Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- G.** The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.
- H.** Deficiency Tracking System. The Contractor shall maintain a cumulative list of deficiencies identified for the duration of the project. The list shall be maintained at the project site. Copies of updated listings shall be available for OAC meetings.

3.5 Follow Up Phase

Daily checks shall be performed to assure quality control activities, including the contractor and control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work becomes unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

3.6 Other Quality Controls

- A. Material Observation and Testing to verify control measures
The Contractor shall coordinate the owner's independent testing agency to perform specified or required observation and tests to verify that control measures are adequate to provide a product which conforms to contract requirements. The Owner's observation and testing agency will provide the Contractor, Owner and design personnel the reports showing the results from observation and test specimens of construction materials including soil, rock, aggregate, asphalt, concrete, and steel. If there are observations that determine the materials installed are not in compliance or test that fail due to the performance of the contractor, then additional observation or testing cost required to ensure or verify the products installed meet the contract requirements will be at the expense of the contractor.
- B. Independent Roof Observations
If the project involves roof work the contractor will provide a Registered Roof Observer (RRO) services during all roof related construction activities. The Registered Roof Observers will perform oversight and quality control on all roof work to assure compliance with the projects plans and specifications. The RRO will supply recommendations and reports to the CQC manager and the Owner's project manager for review stating the number of squares of roof work performed and the contractor's compliance with specifications and details. The RRO shall take color photographs (a minimum 24 photos total for the project) of every type of activity performed that shall include (but not limited to) insulation attachment, application of roofing membrane and flashings, sheet metal installation, material storage/handling and a punch list indicating items for contractor to correct.
- C. Commissioning of Building Systems
The Contractor shall coordinate the Owner's independent commissioning agent to perform necessary observation of the systems being installed so as not to interrupt the sequencing of events or project schedule. The commissioning agent shall prepare a report following their observations and inspections listing deficient items not installed per contract documents. These items are to be included in the project deficiency tracking log.
- D. Operation & Maintenance Manuals
The contractor shall submit one copy of the operation and maintenance manual for review and approval prior to conducting any Owner system training.

E. Owner system and maintenance training

The contractor shall coordinate with the equipment manufacturer, trade contractor, facility maintenance personnel and any other personnel required to be attendance to ensure the Owner is properly trained on the equipment to include written instructions and training sign-off for the following.

1. Identify locations and show operation of switches, valves, etc. used to start, stop and adjust system.
2. Explain flow diagrams, operating sequences, etc.
3. Identify maintenance access points
4. Explain use of controls, gauges and other information the user needs to operate the equipment
5. Explain lock out/tag out procedures
6. Demonstrate operation through complete cycles and full range of operation in all modes including testing and adjusting relevant to operation.
7. Demonstrate commonly occurring problems
8. Identify procedures that must be performed by factory personnel
9. Point out items that require periodic maintenance and intervals
10. Identify in specific maintenance materials that must be used
11. Explain cleaning, care and servicing of all equipment
12. Review extra material stock left and how to change them out
13. Provide necessary tools for service and review how they are to be used.

3.7 COMPLETION INSPECTIONS

3.7.1 Punch-Out Inspection

Near the end of the work, the project superintendent and the CQC Manager shall conduct an inspection of the work. Create a punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation. The list of deficiencies shall include the estimated date by which the deficiencies will be corrected. The CQC Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected. Once this is accomplished, the Contractor shall notify the Owner and the Architect that the facility is ready for the Substantial completion inspection.

3.7.2 Substantial Completion Inspection

The Architect, Owner and other facility users will inspect to verify that the facility is complete and ready to be occupied. A Punch List will be developed as a result of this inspection. The Contractor's CQC Manager and project superintendent shall ensure that all items on this list have been corrected before notifying the team, so that a Final inspection can be scheduled. Any items noted on the substantial completion inspection shall be corrected in a timely manner.

3.7.3 Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person along with the Owner's Representative and necessary design personnel shall be in attendance at the final acceptance inspection.

Definable Features of Work

A definable feature of work is a task which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature of work, there are frequently more than one definable features under a particular section. This list will be agreed upon during the submittal coordination meeting.

PROJECT NAME - Definable Features of Work - Pg 1

Feature Designation	Spec Section	Description
A	02 41 00	Demolition
A	02 82 14.00	Asbestos Hazard Control Activities
A	02 83 13.00	Lead in Construction
A	02 84 16	Handling of Lighting Ballasts and Lamps Containing PCBs and Mercury
B	02 50 20	Earthwork
B	02 80 00	Final Grading
C	03 30 00	Exterior Concrete Paving & Walks
D	03 50 10	Concrete Footings & Foundations
D	03 51 00	Concrete Slabs on Grade
D	03 51 50	Concrete Slabs on Deck
E	04 20 00	New Masonry
E	04 90 00	Restoration and Cleaning of Masonry in Historic Structures
E	03 45 00	Architectural Precast
E	04 45 00	Stone
F	05 12 00	Structural Steel
F	05 50 00	Metal: Miscellaneous and Fabrications
G	06 10 00	Rough Carpentry
H	06 20 00	Finish Carpentry
H	06 41 16	Laminate Clad Architectural Casework
H	06 61 16	Solid Polymer (Solid Surfacing) Fabrications
H	12 32 00	Residential Cabinets and Countertops
I	07 11 13	Bituminous Damproofing
J	07 46 00	Stucco Wall Finish
J	07 66 00	EIFS Systems
J	07 60 00	Flashing and Sheet Metal
K	07 66 00	EPDM Roofing
K	07 80 50	Asphalt Roofing
K	07 60 00	Flashing and Sheet Metal
K	07 88 00	Gutters & Downspouts
K	07 92 00	Joint Sealants
L	07 21 16	Mineral Fiber Blanket Insulation
L	07 84 00	Firestopping
L	05 22 00	Steel Stud Framing
L	09 29 00	Gypsum Board
L	08 11 13	Steel Doors and Frames
M	07 92 00	Joint Sealants
N	08 11 13	Steel Doors and Frames
N	08 14 00	Wood Doors
N	08 71 00	Door Hardware
N	08 81 00	Glazing
O	08 46 53	Aluminum Storefronts
O	08 56 53	Curtain Wall Units
O	08 71 00	Door Hardware
O	08 81 00	Glazing

PROJECT NAME - Definable Features of Work - Pg 2

Feature Designation	Spec Section	Description
P	09 31 00	Ceramic Tile
P	09 65 00	Resilient Flooring
P	09 68 00	Carpet
Q	09 72 00	Wall Coverings
Q	09 90 00	Paints and Coatings
R	10 10 00	Visual Communications Specialties
R	10 14 02	Interior Signage
R	10 21 13	Toilet Compartments
R	10 22 13	Wire Mesh Partitions
R	10 26 13	Wall and Corner Guards
R	10 28 13	Toilet Accessories
R	10 44 16	Fire Extinguishers
R	12 21 00	Window Blinds
R	12 61 00	Special Seating
S	12 40 80	Elevator
T	21 13 13.00	Wet Pipe Sprinkler System, Fire Protection
U	22 00 00	Plumbing, General Purpose
U	23 00 00	Air Supply, Distribution, Ventilation, and Exhaust Systems
U	23 07 00	Thermal Insulation for Mechanical Systems
U	23 21 13.00	Low Temperature Water LTW Heating System
U	23 21 13.23	High Temperature Water HTW Heating System
U	23 64 00.00	Liquid Chillers
U	23 64 26	Chilled Water Piping Systems
V	23 05 93.00	Testing, Adjusting, and Balancing of HVAC Systems
V	23 08 00.00	Commissioning of HVAC Systems
V	23 09 23.13	Direct Digital Control Systems for HVAC - BACNet
W	26 00 00	Basic Electrical Materials and Methods
W	26 05 48	Seismic Protection for Electrical Equipment
W	26 20 00	Interior Distribution System
W	26 23 00	Switchboards (MDP)
W	26 51 00	Interior Lighting
W	27 10 00	Building Telecommunications Cabling System
W	28 31 76	Interior Fire Alarm and Mass Notification System
X	32 16 13	Irrigation System
X	32 52 19	Plants & Bushes
X	32 58 01	Seeding & Sod
Y	33 50 00	Exterior Utilities
Z		LEED Implementation and Certification

Three Phase Quality Control System

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of work as follows:

1. Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are approved/accepted, and after copies are at the work site. This phase shall include:

- A. Review each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- B. A review of the contract drawings
- C. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- D. Review of provisions that have been made to provide required control inspection and testing.
- E. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- F. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- G. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- H. Discussion of procedures for controlling quality of the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- I. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Owner's Project Manager
- J. Resolve all differences.
- K. The Owner and A/E shall be notified at least 24 hours in advance of beginning the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the contractor's daily report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

2. Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. There should be enough of the system installed to get an idea of the finished product. The following shall be accomplished:

- A.** Check the work in place to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- B.** Verify adequacy of controls to ensure full contract compliance. Verify required control inspection and testing.
- C.** Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with required sample panels as appropriate.
- D.** Resolve all differences
- E.** Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with the workers.
- F.** The Government shall be notified at least 24 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- G.** The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3. Follow Up Phase

Daily checks shall be performed to assure quality control activities, including the contractor and control testing, are providing continued compliance with contract requirements, until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

Additional preparatory and initial phases shall be conducted on the same definable features of work if: the quality of on-going work becomes unacceptable; if there are changes in the applicable CQC staff, onsite production supervision or work crew; if work on a definable feature is resumed after a substantial period of inactivity; or if other problems develop.

Material Observation & Material Testing

- A. **Material Observation and Testing to very control measures**
The Contractor shall coordinate the owner's independent testing agency to perform specified or required observation and tests to verify that control measures are adequate to provide a product which conforms to contract requirements. The Owner's observation and testing agency will provide the Contractor, Owner and design personnel the reports showing the results from observation and test specimens of construction materials including soil, rock, aggregate, asphalt, concrete, and steel. If there are observations that determine the materials installed are not in compliance or test that fail due to the performance of the contractor, then additional observation or testing cost required to ensure or verify the products installed meet the contract requirements will be at the expense of the contractor.

Follow Up Phase Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Owner's design and construction Representative shall be in attendance at the follow up acceptance inspection. The installed system will be inspected and noted if there are any deficiencies that need to be corrected or materials replaced. If there are items they will be noted and a return inspection will be re-scheduled. If no deficiencies are noted then it will be noted and signed off for the next feature of work to begin. This sign off does not constitute final acceptance. This will be completed at the end of the project.

Final Acceptance Inspection

The Contractor's Quality Control Inspection personnel, plus the superintendent or other primary management person, and the Owner's Design and construction Representative shall be in attendance at the final acceptance inspection. Additional personnel including, but not limited to, those from Facility user groups, and maintenance personnel may also be in attendance. The final acceptance inspection will be formally scheduled by the team based upon results of the Pre-Final inspection. Notice shall be given to the Owner's project manager at least 7 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Owner to bill the Contractor for their additional inspection cost in accordance with the contract.



PREPARATORY PHASE CHECKLIST

(TO BE CONDUCTED PRIOR TO ANY WORK GOING IN PLACE)

PROJECT NAME:		PROJECT NO:	
Definable Feature of Work:	Spec Section:	Date:	

PERSONNEL PRESENT	Owner Rep Notified <u>24</u> Hours in Advance: YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Name: (Add'l Names on Back)	Position	Company

SUBMITTAL REVIEW	REVIEW SUBMITTALS AND SUBMITTAL LOG, HAVE ALL SUBMITTALS BEEN APPROVED? YES <input type="checkbox"/> NO <input type="checkbox"/>	
	IF NO, WHAT ITEMS HAVE NOT BEEN SUBMITTED OR APPROVED?	
	NOT SUBMITTED: _____	
	NOT APPROVED: _____	

MATERIALS	ARE ALL MATERIALS ON HAND TO COMPLETE WORK? YES <input type="checkbox"/> NO <input type="checkbox"/>	
	HAVE MATERIAL DELIVERIES BEEN CHECKED AGAINST APPROVED SUBMITTALS: YES <input type="checkbox"/> NO <input type="checkbox"/>	
	COMMENTS: _____	

WORKMANSHIP	ESTABLISH LEVEL OF WORKMANSHIP.	
	WHERE IS WORK LOCATED? _____	
	IS SAMPLE PANEL REQUIRED? YES <input type="checkbox"/> NO <input type="checkbox"/>	WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? YES <input type="checkbox"/> NO <input type="checkbox"/>
	(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)	
DISCUSS CONCERNS AND EXPECTATIONS: _____		

MATERIAL STORAGE	ARE MATERIALS STORED PROPERLY? YES <input type="checkbox"/> NO <input type="checkbox"/>	
	COMMENTS: _____	

SAFETY REVIEW	REVIEW JOB CONDITIONS USING OSHA 1926 AND JOB HAZARD ANALYSIS	

CONTRACTOR: _____ DATE: _____ OWNER: _____ DATE: _____



INITIAL PHASE CHECKLIST

(TO BE CONDUCTED ONCE SMALL PORTION OF WORK HAS BEEN COMPLETED)

PROJECT NAME:	Fort Collins Senior Center	PROJECT NO:	7440
Definable Feature of Work:	Spec Section:	Date:	

PERSONNEL PRESENT	Owner Rep Notified <u>24</u> Hours in Advance: YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Name: (Add'l Names on Back)	Position	Company

PROCEDURE COMPLIANCE	IDENTIFY FULL COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY, COORDINATE PLANS, SPECIFICATIONS AND SUBMITTALS.
	COMMENTS: _____

PRELIMINARY WORK	ENSURE PRELIMINARY WORK IS COMPLETE AND CORRECT, IF NOT, WHAT ACTION IS TAKEN?

WORKMANSHIP	ESTABLISH LEVEL OF WORKMANSHIP.
	WHERE IS WORK LOCATED? _____
	IS SAMPLE PANEL REQUIRED? YES <input type="checkbox"/> NO <input type="checkbox"/>
	WILL THE INITIAL WORK BE CONSIDERED AS A SAMPLE? YES <input type="checkbox"/> NO <input type="checkbox"/>
	(IF YES, MAINTAIN IN PRESENT CONDITION AS LONG AS POSSIBLE AND DESCRIBE LOCATION OF SAMPLE)
DISCUSS CONCERNS AND EXPECTATIONS:	

FOLLOW UP REVIEW	WILL A NEW INITIAL REVIEW NEED TO BE CONDUCTED? YES <input type="checkbox"/> NO <input type="checkbox"/>
	COMMENT: _____
	APPROVED TO PROCEED ON WITH WORK WITH CORRECTIONS? YES <input type="checkbox"/> NO <input type="checkbox"/>

SAFETY REVIEW	REVIEW JOB CONDITIONS USING OSHA 1926 AND JOB HAZARD ANALYSIS

CONTRACTOR: _____ DATE: _____ OWNER: _____ DATE: _____



FOLLOW UP PHASE CHECKLIST

(TO BE CONDUCTED ONCE WORK HAS BEEN COMPLETED)

PROJECT NAME:		PROJECT NO:	
Definable Feature of Work:	Spec Section:	Date:	

PERSONNEL PRESENT	Owner Rep Notified <u>24</u> Hours in Advance: YES <input type="checkbox"/> NO <input type="checkbox"/>		
	Name: (Add'l Names on Back)	Position	Company

WORK COMPLIANCE	IDENTIFY COMPLIANCE WITH PROCEDURES IDENTIFIED AT PREPARATORY AND INITIAL PHASES OF WORK AND PROJECT SPECIFICATIONS.
	COMMENTS: _____

CORRECTIVE ACTION	REPLACE <input type="checkbox"/> REPAIR/REWORK <input type="checkbox"/> USE AS-IS <input type="checkbox"/>
	COMMENT: _____

CORRECTIVE ACTIONS COMPLETED (NAME/DATE): _____ DATE: _____	
OWNER'S ACCEPTANCE OF CORRECTIVE ACTION REQUIRED YES <input type="checkbox"/> NO <input type="checkbox"/>	
OWNER'S ACCEPTANCE (SIGNATURE/DATE): _____ DATE: _____	

CORRECTIVE ACTION	REPLACE <input type="checkbox"/> REPAIR/REWORK <input type="checkbox"/> USE AS-IS <input type="checkbox"/>
	COMMENT: _____

CORRECTIVE ACTIONS COMPLETED (NAME/DATE): _____ DATE: _____	
OWNER'S ACCEPTANCE OF CORRECTIVE ACTION REQUIRED YES <input type="checkbox"/> NO <input type="checkbox"/>	
OWNER'S ACCEPTANCE (SIGNATURE/DATE): _____ DATE: _____	

SAFETY REVIEW	REVIEW JOB CONDITIONS USING OSHA 1926 AND JOB HAZARD ANALYSIS

CONTRACTOR: _____ DATE: _____ OWNER: _____ DATE: _____

QC Testing and Inspections Procedures and Log

Material Observation and Testing shall be conducted to verify control measures. The Contractor shall coordinate the owner's independent testing agency to perform specified or required observation and tests to verify that control measures are adequate to provide a product which conforms to contract requirements. The Owner's observation and testing agency will provide the Contractor, Owner and design personnel the reports showing the results from observation and test specimens of construction materials including soil, rock, aggregate, asphalt, concrete, and steel. If there are observations that determine the materials installed are not in compliance or test that fail due to the performance of the contractor, then additional observation or testing cost required to ensure or verify the products installed meet the contract requirements will be at the expense of the contractor.

The contractor shall complete and update the log to show when each test inspection was conducted and the results in the remarks column of either pass or fail.

INSPECTION TEST PLAN AND LOG

CONTRACT NUMBER [Contract Name]	PROJECT NAME [Project Name]	CONTRACTOR [Company Name]
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Item	Spec #	Specifications Section	Subsection	Inspections & Tests Required	Frequency	Inspection-Test By <small>(All tests verified by Superintendent and/or QC Manager)</small>	Date Completed	Date Forwarded To City PM	Remarks
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									

Quality Control Deficiency Log

The contractor QA/QC Manager shall maintain a log of all Quality Control deficiencies showing the date the item was determined to be deficient, the feature of work it relates to, the company or contractor responsible for correcting the item, a description of the deficiency, the date it was corrected and the sign-off that it was corrected.

No items should ever be removed from the list. The list shall be reviewed at each OAC meeting with a list provided of the open items a date it is anticipated each item will be corrected and signed off.

All correspondence regarding each deficient item shall be maintained for future tracking of issues and how they were resolved.

PROJECT NAME
QC Deficiency Log

Number	Date Initiated	Feature of Work	Company	Description	Date Corrected	Owner Sign-off
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						

Project Close-out Items

1. Building Commissioning Report – Maintain a copy of each report showing the items noted and comments.
2. Building Blow Door Report – Maintain a copy of each report showing the results for entire building.
3. The design team shall verify all warranties have been submitted and satisfy the contract documents and then issue a letter to the Owner stating this requirement has been met.
4. The design team shall verify the contractor has satisfied the requirements of the contract documents for the O&M manual and turn them over to the Owner with a letter indicating this.
5. The design team shall verify the contractor has satisfied the requirements of the contract documents for the record drawings and turn them over to the Owner with a letter indicating this.
6. The lead designer shall issue a letter to the City of Fort Collins stating the project has been completed per their design.

Project Warranty Service Request & Log

Upon the City Project Manager being notified of a warranty issue a Service Request form shall be filled out indicating the warranty issue and adding the item to the project warranty log. The service request is then sent to the General Contractor so that he can identify who is responsible for the service and track the work being performed.

Once the service work has been completed to the satisfaction of the General Contractor the signed off form should be returned to the City Project Manager with any comments. The Project Manager shall verify the work was done and sign off and return a copy to the General Contractor and place a copy in the project file.



WARRANTY SERVICE REQUEST

No. WR- 1

DATE: _____	CONTRACTOR CONTACT: _____	
	PHONE NO.: _____	
PROJECT: _____		
ADDRESS: _____	SITE CONTACT: _____	
CITY: _____	PHONE NO.: _____	

PLEASE RESPOND TO THE FOLLOWING WARRANTY ITEM(S) BY: _____ **DATE:** _____

ITEM NO.	DESCRIPTION OF WARRANTY ISSUE	WARRANTING CONTRACTOR	REPAIR COMPLETED DATE	GC'S APPROVED DATE	OWNER APPROVED DATE

WARRANTING CONTRACTOR COMMENTS:

GC COMMENTS:

OWNER COMMENTS:

GENERAL CONTRACTOR - PLEASE RETURN ONE COPY OF THIS DOCUMENT UPON COMPLETION AND YOUR APPROVAL.

ALL WARRANTY ITEMS ARE COMPLETE TO THE SATISFACTION OF THE INDIVIDUALS AS AGREED BELOW:

OWNER: _____ GENERAL CONTRACTOR: _____

