

QUALITY MANAGEMENT PLAN

2401 - SYD57 Echidna

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Q-PLAN-01 (Rev 2307) | Approved by Stephen Player
Uncontrolled copy once printed

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1. Introduction

ABOUT THE COMPANY

Taylor is a dynamic construction and property delivery partner connecting people and spaces. Established in 1994, Taylor design, construct and develop diverse projects for all sectors from project inception to completion. With more than 250 team members, Taylor service its clients across core divisions including construction, fit out & refurbishment and property.

At Taylor, we believe that completing quality projects on time and on budget is a given. We strive to deliver more. We are nimble, responsive and we create enduring spaces by focussing on the end user and connect the projects we deliver with the needs of the people who use them.

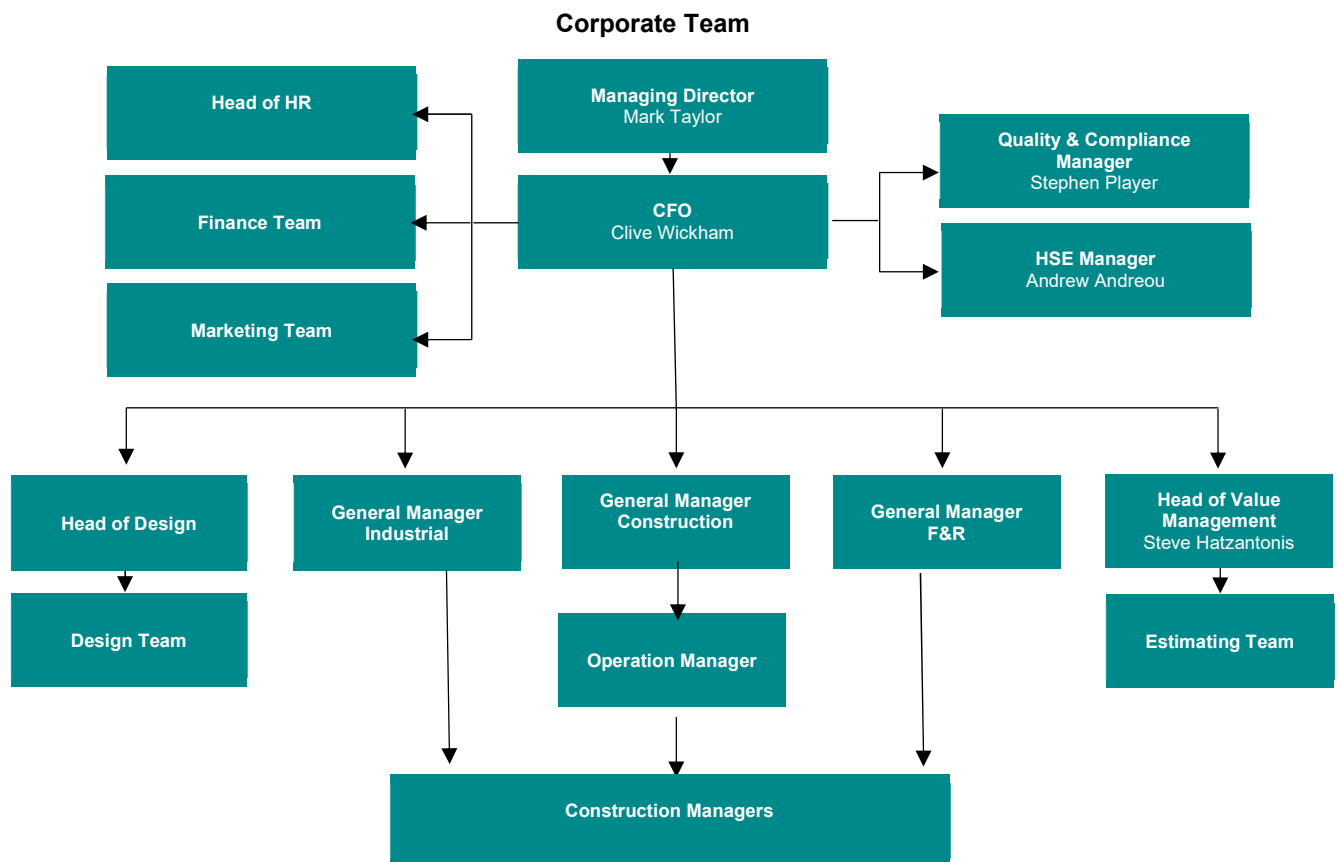
Our reputation is built on fundamental principles of listening and understanding our clients' objectives, and building meaningful relationships with our people, clients, and business partners, essential for recognition as a trusted advisor and delivery partner of choice.

1.1. PURPOSE OF THE QUALITY MANAGEMENT PLAN

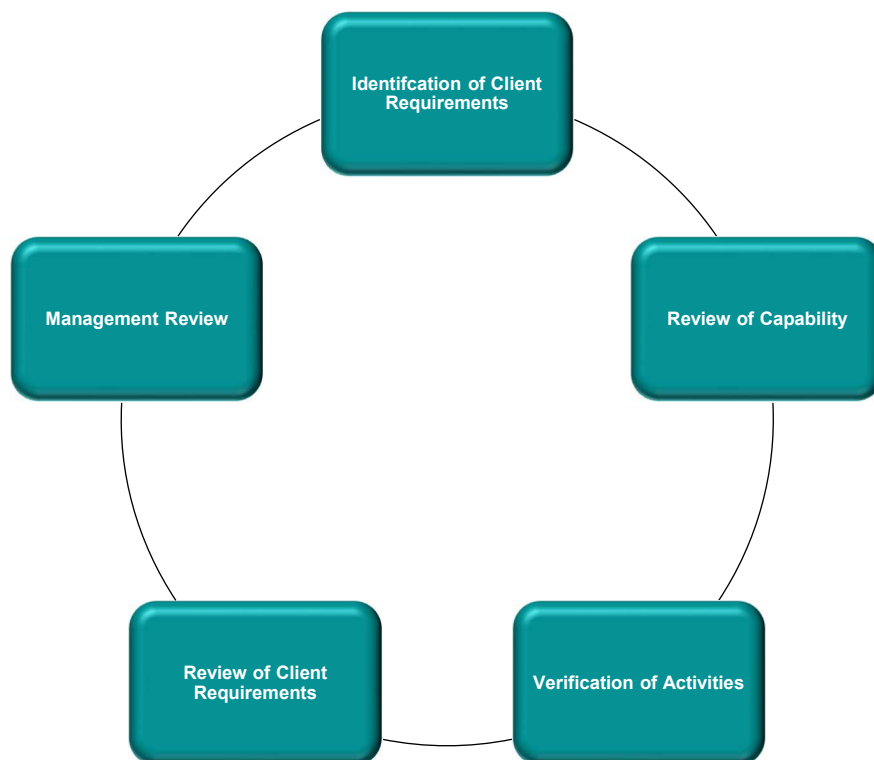
The Quality Management Plan documents the necessary information required to effectively manage quality from project planning to delivery. It defines quality policies, procedures, criteria for and areas of application, and roles, responsibilities, and authorities.

A Project Management Plan is created during the Planning Phase of the Project. Its intended audience is the Project Manager, Project Team, the Client, and any Senior Management whose support is needed to carry out the plan.

1.2. ORGANISATION STRUCTURE



1.3. WORK PROCESS FLOW





2. Definitions

The following definitions apply throughout all parts of this Plan and the Management System:

- **Audit:** systematic, independent, and documented process for obtaining evidence and evaluating it to determine the extent to which agreed criteria are fulfilled
- **Documented procedure:** those are specific documents required by international standards and/or internal requirements.
- **Interested party:** individual or group concerned with or affected by the QSE performance of an organisation; this includes employees, subcontractors, suppliers, clients, neighbours, environmental groups, media, regulators, insurers, investors, and anyone else concerned or affected by an Organisation's overall performance.
- **Objective:** overall Integrated Management System goal, arising from the policies, that an organisation sets itself to achieve, and which is quantified and measured where practicable
- **Organisation:** group of people and facilities with an arrangement of responsibilities, authorities, and relationships.
- **Process:** is defined as a set of interrelated or interacting activities which transforms inputs into outputs
- **Product:** result of a process (product, project, services, software, hardware, and process materials)
- (NB: Throughout the text of this, wherever the term "product" occurs, it can also mean "Project or Service")
- **Records:** documents that state results achieved or providing evidence of activities performed.

3. Exclusions

Not Applicable



4. The Quality Management System

4.1. GENERAL REQUIREMENTS

Taylor Construction Group has established, documented and implemented a Quality Management System to meet the requirements of the internationally recognized standard, ISO 9001.

In doing so, the Company has:

- Identified the processes needed for the Quality Management System and their application throughout the organization.
- Determined the sequence and interaction of these processes,
- Determined the criteria and methods needed to ensure that both the operation and control of these processes are effective.
- Ensured the availability of resources and information necessary to support the operation and monitoring of these processes.
- Monitored, measured, and analyses these processes, and implemented action necessary to achieve planned results and continual improvement of these processes.

The processes are managed by the Company in accordance with the requirements of the standard ISO9001.

4.2. DOCUMENTATION

The Company's Quality Management System documentation includes:

- This Quality Management Plan.
- Company Policies.
- Procedures required by the standard ISO9001.
- Other documents needed by the Company to ensure effective planning, operation, and control of processes; and
- Records required by the standard ISO9001.

4.2.1. Quality Manual

This Quality Management Plan has been developed to provide an overview of the Company's Quality Management System and to describe all processes and their interactions, regarding the Quality Management process.

4.2.2. Control of Documents

Documents required by the Quality Management System are controlled. A Document Control Procedure has been included in the system to define the controls needed to:

- Approve documents for adequacy prior to issue.
- Review and update as necessary and re-approve documents.



- Ensure that changes and current revision status of documents are identified.
- Ensure that relevant versions of applicable documents are available at points of use.
- Ensure that documents remain legible and readily identifiable.
- Ensure that documents of external origin are identified, and their distribution controlled; and
- Prevent the unintended use of obsolete documents, and to appropriately identify them if they are retained for any purpose.

4.2.2.1. Supporting Documents:

- **Procedure QSE-P-25 Document Control**
- **Procedure QSE-OP-23.01 Office Document, Record and Data Control**
- **Procedure QSE-OP-23 Project Document, Record and Data Control**

4.2.3. Control of Records

Records have been established and maintained to provide evidence of conformity to requirements and of the effective operation of the Quality Management System.

These records are legible, readily identifiable, and retrievable.

A documented procedure has been included in the system to define the controls needed for the identification, storage, protection, retrieval, retention time and disposal of records.

4.2.3.1. Supporting Documents:

- **Procedure QSE-P-36.00 Retention of Records and Archiving**
- **Procedure QSE-P-36.01 Classification of Records**
- **Procedure QSE-OP-23.01 Office Document, Record and Data Control**
- **Procedure QSE-OP-23 Project Document, Record and Data Control**



5. Management Responsibility

5.1. MANAGEMENT COMMITMENT

Management has provided evidence of their commitment to the Quality Management System and continually improving its effectiveness by:

- Communicating to all employees the importance of meeting client as well as statutory and regulatory requirements.
- Establishing the Quality Policy.
- Ensuring that Quality Objectives are established.
- Conducting Management Reviews; and
- Ensuring the availability of resources.

5.1.1.1. Supporting Documents:

- [Quality Policy](#)
- [Procedure QSE-P-16 Management Review](#)

5.2. CUSTOMER FOCUS

Management has ensured that client requirements are determined and are met with the aim of enhancing customer satisfaction. Client requirements are identified at the tender stage and clarified again at tender award.

Taylor Construction Group understands that client satisfaction is vital to our business, therefore client requirements are made the priority and if necessary, the Project Management Plan is amended to address the client's specific requirements.

5.3. QUALITY POLICY

Management has implemented a Quality Management Policy, and has ensured that the Policy:

- Is appropriate to the purpose of the Company.
- Includes a commitment to comply with requirements and continually improve the effectiveness of the Quality Management System.
- Provides a framework for establishing and reviewing Quality Objectives.
- Is communicated and understood within the Company; and
- Is reviewed for continuing suitability.



5.3.1.1. *Supporting Documents:*

- **Quality Management Policy**

5.4. PLANNING

5.4.1. Quality Objectives

Management has ensured that Quality Objectives, including those needed to meet client requirements, are established at relevant functions and levels within the Company.

5.4.1.1. *Supporting Documents:*

- **Objectives & Targets Register**
- **QSE-F-10 Project Launch Agenda Briefing**
- **QSE-F-10.1a QSE Project Commencement Report**

5.4.2. Quality Management System Planning

Management has ensured that:

- The planning of the Quality Management System is carried out in order to meet business and client requirements, as well as the requirements of ISO9001; and
- The integrity of the Quality Management System is maintained when system changes are planned and implemented.

The basis of the Company's Quality Planning activities and objectives are listed below:

- Implement Taylor Construction Group's Quality Management System consistent with AS/NZS ISO 9001.
- This Quality Management Plan (QMP) has been developed on project specific basis as a tool to assist with the effective implementation of the organisation's Quality Management System and quality obligations.
- Understand the client's requirements and ensure the QMP addresses these requirements.
- Ensure Procurement Management Procedure addresses all quality objectives/requirements.
- Ensure supplier and sub-contractor quality systems are assessed and Taylor Construction Group are satisfied that quality can be managed effectively with the external suppliers and subcontractors selected on a project.
- Development of Project specific ITPs, Checklists, and Forms.
- Audit and inspection schedule.
- Ensure all personnel are competent to undertake their assigned tasks.
- Provide adequate training and supervision to employees and subcontractors.
- Plan the project to minimise risk and realise the client's objectives.
- Monitor and measure project deliverables to demonstrate compliance.
- Take timely action to prevent or rectify non-conformance.
- Continually review and improve our systems.

5.4.2.1. *Project Management Plans*

All projects require the preparation of management plans to ensure that Quality, Workplace Health & Safety and Environmental issues are appropriately managed on a day-to-day basis.

At each Taylor Construction Group managed project, the Project Manager shall be responsible for the development and implementation a Project Management Plan. This plan shall act as an overarching document that addresses the requirements for Quality, Safety and Environment.



Detailed templates have been prepared and are available on SharePoint. The templates are to be used as the initial basis for preparation of the Plans and must be adapted to reflect the project requirements. The Project Manager has overall responsibility to ensure that the Management Plans are prepared and implemented.

Subsidiary plans such as a Project Work Health & Safety Plan (PWHSP), Project Environmental Management Plan (PEMP) and a Project Emergency Control Management Plan (PECMP) are also to be prepared.

5.4.2.2. Supporting Documents:

- **QSE-PLAN-01 Project Management Plan**
- **WHS-PLAN-02 Project Workplace Health and Safety Plan (PWHSP)**
- **E-PLAN-03 Project Environmental Management Plan**
- **SE-P-07 Project Emergency Control Management Plan**
- **PDP-0 Design Management Plan**
- **Aboriginal Participation Plan**

5.5. RESPONSIBILITY, AUTHORITY & COMMUNICATION

5.5.1. Responsibility & Authority

Management has ensured that responsibilities and authorities are defined and communicated within the Company.

5.5.1.1. Supporting Documents:

- Position Descriptions
- QSE-PLAN-01 Project Management Plan
- WHS-PLAN-02 Project Workplace Health and Safety Plan (PWHSP)
- E-PLAN-03 Project Environmental Management Plan
- SE-P-07 Emergency Response Plan
- RACI Matrix

5.5.2. Management Representative

The Quality & Compliance Manager, irrespective of other responsibilities, has the responsibility and authority that includes:

- Ensuring that processes needed for the Quality Management System are established, implemented and maintained.
- Reporting to senior management on the performance of the Quality Management System and any need for improvement; and
- Ensuring the promotion of awareness of client requirements throughout the Company.

5.5.3. Internal Communication

Management has ensured that appropriate communication processes are established within the Company and that communication takes place regarding the effectiveness of the Quality Management System.

5.5.4. Supporting Documents:

- Communication Policy



5.6. MANAGEMENT REVIEW

Management formally review the Quality Management System, at planned intervals, to ensure its continuing suitability, adequacy, and effectiveness. This review includes assessing opportunities for improvement and the need for changes to the management system, including the Quality Policy and Quality Objectives. Records from Management Reviews are appropriately maintained.

5.6.1. Review Input

The inputs to Management Review include information on:

- Results of Audits,
- Client Feedback,
- Process Performance and Product Conformity
- Status of Preventive and Corrective Actions,
- Follow-Up Actions from Previous Management Reviews,
- Changes That Could Affect the Quality Management System, and
- Recommendations for improvement.

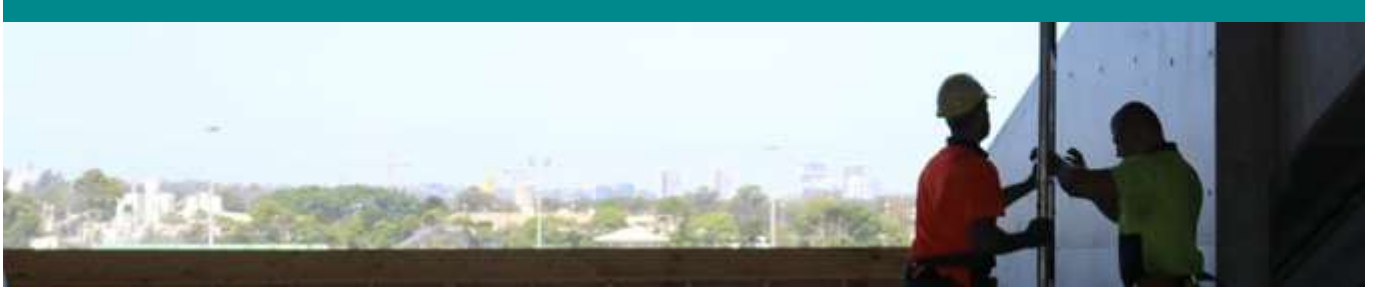
5.6.2. Review Output

The outputs from the management review include any decisions and actions related to:

- Improvement of the effectiveness of the Quality Management System and its processes.
- Improvement of product related to client requirements; and
- Resource needs.

5.6.2.1. Supporting Documents:

- **Procedure QSE-P-16 Management Review**
- **Management Review Minutes**
- **Internal & External Audit Reports**
- **QSE-F-36.2 Client Referee Report**



6. Resource Management

6.1. PROVISION OF RESOURCES

Management has determined and provided the resources needed:

- To implement and maintain the Quality Management System and continually improve its effectiveness, and
- To enhance customer satisfaction by meeting client requirements.

6.1.1.1. Supporting Documents:

- [Weekly Resources Meeting Minutes](#)
- [QSE-F-10 Project Launch Agenda Briefing](#)

6.2. HUMAN RESOURCES

6.2.1. General

Personnel performing work affecting conformity to product requirements must be competent based on appropriate education, training, skills, and experience.

6.2.2. Competence, Awareness & Training

Management has ensured that personnel performing work affecting product quality are competent on the basis of appropriate education, training skills and experience.

This has been effectively addressed by:

- Corporate and Project Site-Specific inductions.
- Determining the necessary competence for personnel.
- Providing training or taking other actions to satisfy those needs.
- Evaluating the effectiveness of the action taken.
- Ensuring that all personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of quality objectives; and
- Maintaining appropriate records of education, training, skills, and experience.

6.2.2.1. Supporting Documents:

- [Procedure QSE-P-19 Training Competency and Awareness Procedure](#)
- [QSE-F-25 Training Needs Analysis](#)
- [QSE-F-19.04a Training Request and Workplace Based Training Plan](#)



6.2.3. Infrastructure

Management has determined, provided and maintain the infrastructure needed to achieve conformity to product requirements. Infrastructure includes:

- Buildings and associated utilities.
- Equipment, both hardware and software; and
- Supporting services such as appropriate transport and communication.

6.2.4. Work Environment

Management determines the work environment needed to achieve conformity to product requirements.



7. Product Realisation

7.1. PLANNING OF PRODUCT REALISATION

Management has planned and developed the processes needed for product realisation. This planning is consistent with the requirements of the other processes of the Quality Management System.

In planning product realisation, management have determined the following:

- Quality Objectives and requirements for the product.
- The need to establish processes, documents, and resources specific to the product.
- The required verification, validation, monitoring, inspection, and test activities specific to the product and the criteria for product acceptance; and
- The records needed to provide evidence that the product meets requirements.

7.2. CUSTOMER-RELATED PROCESSES

7.2.1. Determination of Requirements Related to The Product

The Company determines:

- Requirements specified by the client, including the requirements for delivery and post-delivery activities.
- Requirements not stated by the client but necessary for specified or intended use, where known, statutory and regulatory requirements applicable to the product, and
- Any additional requirements considered necessary by the Company.

NOTE: Post-delivery activities include, for example, actions under warranty provisions, contractual obligations such as defect rectification, maintenance services, and supplementary services such as final disposal.

7.2.2. Review of Requirements Related to The Product

The Company formally reviews the requirements related to the product. This review is conducted prior to making a commitment to supply a product to the client (e.g., submission of tenders, acceptance of contracts or orders, acceptance of changes to contracts or orders, variations) and ensures that:

- Product requirements are defined.
- Contract requirements differing from those previously expressed are resolved; and
- The Company has the ability to meet the defined requirements.

Records of the results of the review and actions arising from the review are maintained.

Where the client provides no documented statement of requirement, the client requirements are confirmed by the Company before acceptance.



Where product requirements are changed, the Company ensures that relevant documents are amended and that relevant personnel are made aware of the changed requirements.

7.2.2.1. Supporting Documents:

- **Procedure QSE-P-02 Tender Contract Review and Initiation**
- **Procedure Q-OP-08 Head Contract Management Procedure**
- **Procedure QSE-OP-15 Sub-Contracting Purchasing and Hiring Procedure**

7.2.3. Client Communication

Management has determined and implemented effective arrangements for communicating with clients in relation to:

- Product information,
- Enquiries, contracts, or order handling, including amendments, and
- Client feedback, including client complaints.

All project related communication with the client is via email, Aconex.

A RFI Register and a Variation Register will be maintained as live documents on the project to control the flow of information between client, subcontractors, suppliers, and consultants.

7.2.3.1. Supporting Documents:

- Procedure Q-P-40 Customer Relations
- RFI Register
- Aconex

7.3. DESIGN AND DEVELOPMENT

7.3.1. Design and Development Planning

Taylor Construction Group have established, implemented, and maintained design and development processes to ensure the successful provision of projects in line with Client requirements.

The Company acknowledges that a design process may be determined by many different stakeholders including but not limited to, the Client, Project Managers, Design Managers, Specialist Consultants and Approval Authorities.

The company has determined:

- Stages of the design and development process.
- Review, verification and validation activities appropriate to each design and development stage including Safety in Design.
- Responsibilities and authorities for design and development activities.

7.3.1.1. Supporting Documents:

- **Procedure QSE-P-03 Design Management**
- **PDP-0 Design Management Plan**
- **Design Meeting Minutes**
- **Safety in Design Workshops**
- **Design Status Checklist**

7.3.2. Design and Development Inputs

Inputs relating to service requirements are defined per the Design Management Procedure.

These include:

- Functional and performance requirements.
- Applicable regulatory and legal requirements.
- Standards or Codes of Practice that the organisation has committed to implement.
- Potential consequences of failure due to the nature of the product or service.
- Any other requirements essential for design and development.

These inputs are reviewed for adequacy on a periodic basis. Incomplete, ambiguous, or conflicting requirements are resolved.

7.3.2.1. Supporting Documents:

- **Procedure QSE-P-03 Design Management**

7.3.3. Design and Development Outputs

The outputs of the design and development process are recorded and expressed in terms of requirements, calculations, analysis, or other means that can be verified against input requirements as described in the Procedure QSE-P-03 Design Management.

This process ensures that design and development outputs:

- Meet the design and development input requirements.
- Provide adequate information to production and service operations.
- Contain or reference product acceptance criteria.
- Define the characteristics of the product that are essential for its safe and proper use.

All design and development output documents are reviewed and approved before release per the Procedure QSE-OP-23 Project Document, Record and Data Control.

7.3.3.1. Supporting Documents:

- **Procedure QSE-P-03 Design Management**
- **Procedure QSE-OP-23 Project Document, Record and Data Control**
- **PDP-0 Design Management Plan**
- **Design Meeting Minutes**
- **Safety in Design Workshops**

7.3.4. Design and Development Review

Systematic reviews are planned, conducted, and documented at suitable stages of design and development per the Procedure QSE-P-03 Design Management to:

- Evaluate the ability to fulfil requirements.
- Identify problems and propose follow-up actions.

Participants in the design and development review include representatives of functions concerned with the design and development stage under review. This includes the Client, relevant specialist consultants, Taylor Project Team which may include an appointed Design Manager.

Records of reviews and necessary follow-up actions are maintained in accordance with the Procedure QSE-OP-23 Project Document, Record and Data Control.



7.3.5. Design and Development Verification

Design and Development verification are defined, planned, executed, and recorded by competent personnel to ensure that the design and development output meets the inputs. The results of the verification and subsequent follow-up actions are recorded per the Procedure QSE-P-36.00 Retention of Records and Archiving.

7.3.6. Design and Development Validation

Design and development validation is performed per the Procedure QSE-P-03 Design Management to ensure that resultant products are capable of meeting the requirements for the specified application or intended use, where known, prior to release for delivery or implementation. Where it is impossible to perform full validation prior to delivery or implementation, partial validation is performed to the extent applicable.

The results of the validation and subsequent follow-up actions are recorded per the Procedure QSE-OP-23 Project Document, Record and Data Control.

7.3.7. Control of Design and Development Changes

Design and development changes are documented and controlled in accordance with the QSE-OP-23 Project Document, Record and Data Control. The changes are verified with the relevant stakeholders and approved before implementation, as appropriate.

7.4. PURCHASING

7.4.1. Purchasing Process

Taylor Construction Group ensures that purchased product conforms to the specified purchase requirements. The type and extent of control applied to the supplier and the purchased product is dependent upon the effect of the purchased product on subsequent product realisation or the final product.

Purchasing and procurement includes the purchasing of goods and the supply of services of contractors.

The Company evaluates and selects suppliers based on their ability to supply product in accordance with the purchase requirements. Criteria for selection, evaluation and re-evaluation have been established, and records of evaluations and any necessary actions arising from the evaluations are maintained.

7.4.1.1. Supporting Documents:

- **Procedure QSE-OP-15 – Subcontracting, Purchasing and Hiring Procedure**

7.4.2. Purchasing information

Documented purchasing information must describe the product to be purchased including, where appropriate:

- Requirements for approval of product, procedures, processes and equipment.
- Requirements for qualification of personnel; and
- Quality Management System requirements.

When purchasing goods, consideration must be given to the suitability for the intended task, the WHS and Environmental implications and requirements. The Procedure QSE-OP-15 – Subcontracting, Purchasing and Hiring provides guidance on what should be taken into consideration when purchasing goods and engaging sub-contractors.

7.4.2.1. Supporting Documents:

- **Procedure QSE-OP-15 – Subcontracting, Purchasing and Hiring Procedure**



7.4.3. Verification of Purchased Product

Taylor Construction Group has established inspection activities necessary for ensuring purchased product meets the original purchase requirements.

Where the Company or our client intends to perform verification at the supplier's premises, the Company will state the intended verification arrangements and method of product release in the purchasing information.

7.4.3.1. Supporting Documents:

- **Procedure QSE-OP-15 – Subcontracting, Purchasing and Hiring Procedure**

7.5. PRODUCTION AND SERVICE PROVISION

7.5.1. Control of Production and Service Provision

Taylor Construction Group shall plan and carry out production and service provision under controlled conditions.

Controlled conditions shall include, as applicable:

- The availability of information that describes the characteristics of the product.
- The availability of work instructions, as necessary.
- The use of suitable equipment.
- The availability and use of monitoring and measuring equipment.
- The implementation of monitoring and measurement; and
- The implementation of release, delivery, and post-delivery activities.

7.5.1.1. Supporting Documents:

- **Procedure Q-OP-24 Planning and Programming**
- **Procedure Q-OP-24A Construction Planning Guidelines**
- **Procedure QSE-OP-17 Plant and Equipment**
- **Procedure QSE-OP-27 Inspection and Test Plans Procedure**
- **Q-F-24.2 Tender Programme**
- **QSE-F-35.5 Project Finalisation Action Plan**
- **QSE-PLAN-01- Project Management Plan (PMP)**

7.5.2. Validation of Processes for Production and Service Provision

Taylor Construction Group shall validate any processes for production and service provision where the resulting output cannot be verified by subsequent monitoring or measurement. This includes any processes where deficiencies become apparent only after the product is in use or the service has been delivered. Validation shall demonstrate the ability of these processes to achieve planned results.

The Company shall establish arrangements for these processes including, as applicable:

- Defined criteria for review and approval of the processes.
- Approval of equipment and qualification of personnel.
- Use of specific methods and procedures.
- Requirements for records; and
- Revalidation.



7.5.2.1. Supporting Documents:

- **Procedure QSE-OP-17 Plant and Equipment**
- **QSE-F-27.03 Inspection & Test Plan Register**
- **Inspection & Test Plans**

7.5.3. Identification and Traceability

Where appropriate, Taylor Construction Group shall identify the product by suitable means throughout product realisation. Taylor Construction Group shall identify the product status with respect to monitoring and measurement requirements. Where traceability is a requirement, Taylor Construction Group shall control and record the unique identification of the product.

7.5.3.1. Supporting Documents:

- **Fixed Assets Policy**
- **Asset Register (Cheops)**

7.5.4. Customer Property

Taylor Construction Group shall exercise care with client property while it is under the control or being used by the Company. Taylor Construction Group shall identify, verify, protect, and safeguard client property provided for use or incorporation into the product. If any client property is lost, damaged, or otherwise found to be unsuitable for use, this shall be reported to the client and records maintained. This could include software, access to intellectual property.

7.5.5. Preservation of Product

The Company has established processes to preserve and maintain the integrity of products supplied by the client during internal processing to its intended destination when required. This includes adequately identifying, handling, packaging, storage and protection of the product as applicable.

7.5.5.1. Supporting Documents:

- **Supply Schedule**

7.6. CONTROL OF MONITORING AND MEASURING EQUIPMENT

Taylor Construction Group has determined the monitoring and measurement to be undertaken and the monitoring and measuring equipment needed to provide evidence of conformity of product to determined requirements.

The Company has established processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements.

Where necessary to ensure valid results, measuring equipment will:

- Be calibrated or verified, or both, at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification will be recorded.
- Be adjusted or re-adjusted, as necessary.
- Have identification in order to determine its calibration status.
- Be safeguarded from adjustments that would invalidate the measurement result.
- Be protected from damage and deterioration during handling, maintenance, and storage.

In addition, the company will assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements and take appropriate action on the equipment and any product affected.

Records of the results of calibration and verification are maintained.



7.6.1.1. Supporting Documents:

- **Procedure QSE-OP-17 Plant and Equipment**
- **QSE-F-27.03 Inspection QSE-F- 22 Calibrated Equipment Register**



8. Measurement, Analysis & Improvement

8.1. GENERAL

Management strives to continually improve the effectiveness of the Quality Management System by establishing and reviewing objectives and targets, carrying out internal audits, collecting and analysing data on business performance, determining and implementing corrective and preventive actions and reviewing the performance of the system on a regular basis.

Taylor Construction Group shall ensure conformity of product and effectiveness of the management system. This shall include the recording of information to track performance, relevant operational controls, and conformance with objectives and targets. This shall also include the determination of the need for, and the extent of their use, applicable methodologies including statistical techniques.

The methodology for measurement and monitoring of realisation processes is to collect data on such aspects as non-conformances, client feedback, internal & external audit reports, monthly project cost reports, project close-out reports, accident/incident reports (WHS and Environment), waste/rework figures and productivity.

This data is then analysed to provide information to enable improvement activities to be implemented, as necessary. The data and subsequent results of analysis are tabled at the management review meetings.

8.1.1.1. Supporting Documents:

- Internal & External Audit Reports
- Project Close Out Reports
- Monthly Project Cost Reports
- Management Review Meeting Minutes

8.2. MONITORING AND MEASUREMENT

8.2.1. Customer Satisfaction & Complaints

As one of the measurements of the performance of the Quality Management System, the Company proactively seeks information from clients to determine whether they are satisfied that their requirements have been met.

The Company uses this feedback to continually improve the performance of the Quality Management System.

8.2.1.1. Supporting Documents:

- Project Control Group (PCG) Meetings
- Site Meetings
- QSE-F-35.1 Project Close-Out Report
- QSE-F-36.2 Client Referee Report

8.2.2. Internal audit

Taylor Construction Group conducts internal audits at planned intervals to determine whether the Quality Management System:

- Conforms to the planned arrangements, to the requirements of this International Standard and to the Quality Management System requirements established by the Company; and
- Is effectively implemented and maintained.

An audit programme has been planned, taking into consideration the status and importance of the processes and areas to be audited, as well as the results of previous audits. The audit criteria, scope, frequency, and methods are regularly defined and reviewed. Records of the audits and their results are maintained.

The selection of auditors and conduct of audits must always ensure objectivity and impartiality of the audit process. Auditors must not audit their own work, or any processes in which they have an involvement.

The management responsible for the area being audited ensure that any necessary corrections and corrective actions are taken without undue delay to eliminate detected nonconformities and their causes. Follow-up activities always include the verification of the actions taken and the reporting of verification results.

8.2.2.1. Supporting Documents:

- [QSE-P-14 Internal Audit Procedure](#)

8.2.3. Monitoring and Measurement of Processes

Management has applied suitable methods for monitoring and, where applicable, measurement of the Quality Management System processes. These methods demonstrate the ability of the processes to achieve planned results. When planned results are not achieved, correction and corrective actions are taken, as appropriate.

8.2.4. Monitoring and Measurement of Product

Taylor Construction Group monitors and measures the characteristics of the product to verify that product requirements have been met. This is carried out at appropriate stages of the product realisation process in accordance with the planned arrangements. Evidence of conformity with the acceptance criteria is maintained.

Records must indicate the person(s) authorising release of product or continuation of process.

The release of product / continuation of process do not proceed until the planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and, where applicable, by the client.

8.2.4.1. Supporting Documents:

- [Procedure QSE-OP-27 Inspection and Test Plans](#)
- [QSE-F-27.03 Inspection & Test Plan Register](#)
- [Inspection & Test Plans](#)
- [QSE-F-27.02 Samples Register](#)
- [QSE-F-27.02a Sample Approval Submission](#)

8.3. CONTROL OF NONCONFORMING PRODUCT

Taylor Construction Group ensures that product that does not conform to requirements is identified and controlled to prevent its unintended use.

The Company deals with nonconforming product or service by:

- Correcting the detected nonconformity,
- Authorising its use under concession by a relevant authority and, where applicable, the client, or



- Disposing of, and replacing, the nonconforming product.

Records of the nature of nonconformities and any actions taken, including concessions obtained, are maintained.

8.3.1.1. Supporting Documents:

- **Procedure QSE-OP-29 Reporting Non-conformance Corrective Preventive Action**
- **QP-29 - Non-Conformance Improvement Action Feedback Form**

8.4. ANALYSIS OF DATA

Management collects and analyses appropriate data to demonstrate the effectiveness of the Quality Management System and to evaluate where continual improvement of the effectiveness of the system can be made.

8.4.1.1. Supporting Documents:

- Management Review Meeting Minutes

8.5. IMPROVEMENT

8.5.1. Corrective Action

Management has ensured that action is taken to eliminate the causes of actual or potential nonconformities.

This includes:

- Reviewing nonconformities, including client complaints.
- Determining the causes of actual nonconformities.
- Evaluating the need for action to prevent recurrence.
- Determining and implementing the action needed.
- Records of the results of action taken; and
- Reviewing the effectiveness of the corrective action taken.

8.5.2. Preventive Action

Management has ensured that action is taken to eliminate the causes of potential nonconformities. This includes:

- Determining potential nonconformities and their causes.
- Evaluating the need for action to prevent occurrence of nonconformities.
- Implementing the action needed.
- Records of results of action; and
- Reviewing the effectiveness of the preventive action taken.

8.5.2.1. Supporting Documents:

- **Procedure QSE-OP-29 Reporting Non-conformance Corrective Preventive Action**
- **QP-29 - Non-Conformance Improvement Action Feedback Form**



9. Appendence 1 – Amazon Website Services Quality Requirements



SECTION 014000 - QUALITY REQUIREMENTS PART 1 - GENERAL

1.1 SUMMARY

- A. Establish and maintain an effective Quality Control Program that encompasses procedures required to produce a complete, defect-free operational product, as detailed in the Contract Documents.
- B. Create, maintain, and perform a testing and inspection plan to verify correct installation and functionality of final products and installed items. The testing and inspection plan shall reference all required inspections and quality checks throughout all phases of construction.
- C. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, Commissioning Authority, Owner Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 CONFLICTING REQUIREMENTS

- A. If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement or requirement imposing the greatest responsibility on Contractor as the case may be. Refer conflicting requirements that are different, but apparently equal, to Owner for direction with sufficient notice to prevent schedule impact.
- B. The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Owner for a decision before proceeding.

1.3 SUBMITTALS

- A. GENERAL CONTRACTOR'S QUALITY CONTROL PLAN
 - 1. Submit a General Contractor's Quality Control Plan in a format similar to Appendix A or as acceptable to the Owner specific to the awarded scope of work. Identify key personnel, procedures, controls, inspections, audit procedures, and forms to be used to carry out Contractor's Quality Assurance and Quality Control responsibilities for all phases of construction.
 - a. The General Contractors Quality Control Plan shall also contain the following:
 - 1. A description of the quality control plan and how its implementation ensures that AWS quality standards are achieved.
 - 2. An organizational structure of the site-based team, team member position



- descriptions, and resumes.
 - 3. A description of project administration, including document control and how quality issues are communicated, tracked, and reported.
 - 4. A plan for critical equipment and material delivery, handling, storage, and protection.
 - 5. A plan for managing all third-party testing agencies and contracted vendors and subcontractors.
 - 6. A plan for pre-commissioning management including a testing and inspection schedule prior to equipment start up.
 - 7. A project close-out plan that addresses Master Punch List (MPL) tracking and resolution, close-out submittal tracking, operations and maintenance manuals, and As-Built drawings.
- b. Submit an initial Quality Control plan with proposed staffing at the time of bid.
 - c. Submit a finalized Quality Control Plan specific to the awarded project within 15 calendar days after Notice of Award.
2. A Testing and Inspection Plan shall be included in the General Contractor's Quality Control Plan. The Testing and Inspection Plan shall include each Definable Feature of Work (DFOW) and be a comprehensive schedule of tasks that require testing or inspection. The General Contractor shall convey the process of each inspection, to include the following:
- a. Tasks to be broken into Commissioning L2-L5 task groups, clearly defining when each phase starts and stops as required by Specification Section 019113-General Commissioning Requirements.
 - b. General Contractor and subcontractor performed tests and inspections including but not limiting to the following activities:
 - 1. Exterior Drainage Systems
 - 2. Underground Utility Systems
 - 3. Foundations Systems
 - 4. Structural Systems
 - 5. Doors and Hardware
 - 6. Mechanical and Electrical Systems Supporting Office Spaces
 - 7. Fire and Life Safety Systems
 - 8. Elevator and Material Handling Equipment
 - 9. Final Architectural Finishes
 - c. Owner Furnished Contractor Installed (OFCI) and Contractor Furnished Contractor Installed (CFCI) equipment testing to be performed by the Owner and their contracted equipment vendor.
 - d. General pre-commissioning schedule that includes tests and inspections prior to the official start of the Owners start of commissioning (Handoff to Commissioning, H2C).
3. An Equipment Protection Plan that details the actions and procedures of the General Contractor and their subcontractors and vendors to be taken for the protection of equipment during the entire construction lifecycle through Substantial Completion to include delivery, storage, and post installation. At a minimum, the Equipment Protection Plan shall incorporate the following:
- a. Protection of installed materials and equipment during phases of the building envelope not being completely dried in or complete.



- b. No installation of critical equipment when the building envelope is not completely dried in and protected from external elements, without approval by owner.
- c. Verification of shipped equipment was properly protected, inspected for damage, and documented on the Receipt Inspection Form (RIF) found in the General Commissioning Specification 019113 and in the Owners appropriate web based project software.
- d. Equipment being stored is stored per manufacturer specification.
- e. Equipment shall be protected with rigid and sealing material until equipment is turned on and ready for startup. If protection needs to be removed in order to work on equipment, minimize the amount of protection removed and make sure to re-install as soon as work is complete.
- f. General Contractor will conduct, at a minimum, daily onsite walks to verify all equipment protection material is properly installed and is only removed for proper reasoning.
- g. General Contractor will inspect and correct found possible shortcomings in the protection of equipment and material before and after adverse weather conditions.
- h. Place temporary filter media over any equipment air intake openings and replace if temporary filter medias fails.
- i. Coordination of building finish activities (i.e. drywall installation, sanding, painting) and overhead work before equipment is set onsite to minimize trade work around equipment. If unavoidable, General Contractor shall take appropriate precautions to protect equipment.
- j. Personnel shall not walk or stand on top of any equipment, unless authorized by owner.
- k. No drilling of any equipment is permitted unless approved by owner. If drilling of unit is needed, the item must be removed from the piece of equipment and drilled away from the unit.
- l. Exercise caution when installing raceways and conductors. Only enter into compartments specifically designed for entry as indicated in the installation manual. Take note of any tags, stickers, or markings that are on the piece of equipment. Any deviation must be approved in writing by the manufacturer and the AWS CM.
- m. If work must happen in the same area as equipment that could potentially damage or create Foreign Object and Debris (FOD), precautions must be taken to maintain room cleanliness with dust management schemes in place. Specific inspection of the equipment must occur after work is complete and signed off by the General Contractor.
- n. FOD inspections are only valid for 24hrs and if a piece of equipment is not powered up within that time the, FOD inspection must be redone.
- o. If heavy construction is required around any mechanical and electric equipment, General Contractor must assign a spotter during the work to help protect equipment.
- p. General Contractor must monitor temperature and humidity in areas with equipment that have environmental requirements as dictated by the manufacturer. General Contractor must not let the environmental conditions deviate from requirements. If environmental conditions do exceed requirements, the GC must notify the owner.
- q. Appropriate signage shall be used on equipment to notifying that caution should be taken around that piece of equipment.
- r. Adequate lighting and heating shall be maintained in equipment to ensure condensation is not present within the equipment.
- s. Equipment and materials shall not be stored on the ground without proper dunnage.

B. THIRD PARTY TESTING AGENCIES

- 1. Submit qualifications from all General Contractor sourced Testing Agencies contracted to perform specific tests and inspections in both the field or laboratory at least 2 weeks prior to the start of work. Include proof of qualifications in the form of nationally recognized



certificates and report from an inspection of a testing agency by a recognized authority.

C. OTHER SUBMITTALS

1. Submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.4 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports monitoring periodic and ongoing quality checks shall be completed using AWS checklists and inspections found in the Owners appropriate web-based Project storage system and Appendix B of this Specification Section and also in section 019113-General Commissioning Specification, when available. Construction Manager approval is needed if a non-AWS form is to be used. If the correct form is not available prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of qualified laboratory inspector.
13. Recommendations on retesting and reinspection.

- C. Manufacturer's Technical Representative's Field Reports shall be prepared in written information documenting manufacturer's technical representative's tests and inspections specified in other Sections and shall include the following:

1. Statement on condition of substrates and their acceptability for installation of product.
2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

PART 2 - PRODUCTS (Not Used)



PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Establish and maintain an effective Quality Control Program that consists of tests, inspections, and procedures to be performed on-site for installed equipment and completed work. The Quality Control Program shall identify and rectify poor craftsmanship and improperly installed equipment, materials, and parts in order to produce a complete, defect-free operational product in accordance with the Contract requirements. The Quality Control Program shall encompass all construction operations and be specific to the contracted scope of work.

3.2 QUALITY CONTROL ORGANIZATION

A. QUALITY CONTROL MANAGER

1. The General Contractor shall identify an onsite Quality Control Manager whose sole responsibility is the overall management of the Quality Control Program for a single site. The Quality Control Manager may not oversee or perform in any capacity on other projects, without owner approval. The Quality Control Manager must be approved by the Owner and may be removed for failure of performance as determined by the Owner.

B. QUALITY CONTROL PERSONNEL

1. The General Contractor shall designate personnel to assist the Quality Control Manager perform tests, inspections, and related actions. These individuals may have other primary duties however, sufficient time must be allocated in order to perform the specialized assigned Quality Control duties as described in the Quality Control Plan.

3.3 MEETINGS

A. CONTRACTOR AWARD KICKOFF MEETING

1. Prior to the start of construction, a Contractor Award Kickoff Meeting shall be conducted. During the Meeting, a mutual understanding of the Quality Control Program must be developed, including the procedures for recording and documenting Quality Control activities to include: tests, inspections, procedures, related actions during and after execution of prescribed activities, and the possible interrelationship between the General Contractor and Owner acquired third party Quality Control Services.

B. QUALITY CONTROL COORDINATION MEETING

1. The Quality Control Coordination Meeting shall be held on a weekly basis or as prescribed by the Owner. The meeting may be held in conjunction with the Owner Architect Contractor (OAC) meeting or as a separate meeting. This meeting shall be led by the General Contractors Quality Control Manager, if necessary the General Contractors Site Lead Superintendent, first and second tier subcontractors, suppliers, and owner representatives may be required to attend to address meeting topics.
2. During this meeting the minimum topics to be discussed will be:
 - a. Open Observations/Deficiency Log on Owners prescribed platform.
 - b. Quality Control Schedule with overview of upcoming and recently conducted tests, inspections, critical activities, hold points etc.
 - c. Test and Inspection Log.



- d. Building Information Model (BIM)/As built model coordination and update.
- e. Review of Redline Documents.
- f. Status of Punch/Snag List (when applicable).
- g. Closeout Documents status in relation to Specification 017700 Closeout Procedures (AMER) and the Exchange Information Requirements (EIR) for EMEA and APAC.

3.4 QUALITY CONTROL PROCESS

- A. The Quality Control Process shall consist of a three-step process to be applied to every definable feature of work and critical activity. The three-step process shall incorporate all requirements of the 014000.IMP Quality Requirements Specification.
 - 1. Preparatory Phase. This phase is performed prior to the beginning of work on each definable feature/activity.
 - a. Review the Contract drawings and Specifications.
 - b. Develop a work plan for each critical activity that depicts the process of the work to be performed and any hold points or inspections that must take place. Review the work plan with the Owner for awareness and acceptance.
 - c. Review and ensure all materials and equipment have been submitted and approved by the Owner and verify that all materials to be used match the approved submittals.
 - d. Confirm all preliminary work has been completed and complies with the Contract Documents.
 - 2. Execution Phase. This phase occurs during the progress of work of the definable feature of work.
 - a. Inspect progress of the work frequently to ensure that it is in full compliance with contract requirements and identify and rectify poor craftsmanship and improperly installed equipment/materials.
 - b. Verify the work plan is being properly followed. Should any changes need to occur, consult the General Contractor's Quality Control Manager and revise the work plan to ensure contract compliance is still being adhered to.
 - c. Verify required inspections and tests are being performed. Notify the General Contractor's Quality Control Manager of any irregularities.
 - d. Record all instances of deficiencies and poor workmanship in the Owners appropriate web based project system and document how the deficiency was corrected and closed.
 - 3. Follow-up Phase. This phase is an extension of the Execution Phase and is not complete until all work associated with the specific definable feature of work/activity is fully complete. Any defects found after this inspection phase will be considered a failure in the quality process and will require the General Contractor to revisit their quality process.
 - a. Conduct final follow-up inspections and correct all deficiencies.
 - b. Do not build upon nor conceal non-conforming work.
 - c. Non-completed Features of work/activities will be considered a deficiency if the Project schedule shows that activity as being complete.
 - d. Record all test and inspection results.

3.5 QUALITY CONTROL INSPECTIONS

- A. The General Contractor shall conduct test and inspections in accordance with the defined Quality Control Process and Contract Documents. Tests and inspections shall be conducted frequently and prior to the completion of an activity or covering of work with a permanent material.



1. The General Contractor shall complete AWS tests and inspections as applicable utilizing the Owners appropriate web based project software. If the General Contractor has a more extensive internal test or inspection, the General Contractor may utilize their test or inspection, with approval by Owner. If the General Contractors test or inspection is approved, the AWS Test must be marked complete and the General Contractors test or inspection be uploaded to the Owners appropriate web based project software as supporting material.

3.6 TEST AND INSPECTION LOG

- A. Maintain a Test and Inspection Log that details the following information:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Owner.
 4. Identification of testing agency or special inspector conducting test or inspection.
- B. Provide access to test and inspection log for Owner and project.
- C. Maintain Inspection Log on the Owners appropriate web based project software and submit the log at project closeout as part of Project Record Documents.

3.7 SPECIAL TESTS AND INSPECTIONS

- A. The Owner will engage a qualified testing agency to conduct special tests and inspections when indicated as Owners responsibility or as required by authorities having jurisdiction as the responsibility of Owner.
 1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 2. Costs for retesting and reinspection that replaces or is necessitated by work that failed to comply with the Contract Documents is the responsibility of the General Contractor.
 3. The General Contractor shall coordinate with agencies and representatives performing tests, inspections, and similar services. Coordination activities are to include the following:
 - a. Scheduling of testing/inspecting services.
 - b. Access and escort to location of work on site.
 - c. Induction into the site safety program
 - d. Incidental labor and facilities necessary to facilitate tests and inspections.
 - e. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 - f. Facilities for storage and field curing of test samples.
 - g. Preliminary mix design proposed for asphalt, concrete, and other material mixes that require control by testing agency.
 - h. Security and protection of test samples.
 4. All third-party testing agencies must adhere to the following:
 - a. Notify the Owner and General Contractor of any concerns that may result in damage to materials or equipment or may negatively impact the results of the services prior to performance of services.
 - b. Notify the Owner and General Contractor of irregularities and deficiencies observed in the during performance of its services.
 - c. Submit a certified written report of each test, inspection, and similar Quality Control activity to the Owner with copy to Contractor and to authorities having jurisdiction, as applicable.



- d. Interpret tests and inspections and stating in each report whether each tested and inspected work complies with or deviates from the Contract Documents.
- B. Tests and inspections not explicitly assigned to Owner are the General Contractor's responsibility. Perform additional Quality Control activities, whether specified or not, to verify and document that the Work complies with requirements and the following:
 - 1. General Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 - 2. Notification to applicable testing agency, Owner, and Owner Quality Control Vendor (if applicable) at least 24 hours in advance of time when Work that requires testing or inspection will be performed, or as required by the vendor to meet schedule requirements.
 - 3. Testing and inspection requested by the General Contractor and their affiliates and not required by the Contract Documents are Contractor's responsibility.
 - 4. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Required retesting and reinspection caused by fault of the Contractor is the Contractor's responsibility regardless of the responsibility of original tests or inspections.

3.8 PROTECTION OF EQUIPMENT

- A. The General Contractor is responsible for implementing and managing a Foreign Object and Debris (FOD) program in accordance with the latest version of the AWS FOD inspection program. The FOD inspection program is to be overseen by the Quality Control Manager to ensure FOD inspections are performed during delivery of equipment, after any work was conducted in or above equipment, and prior to any equipment energizations. Document FOD inspections in the Owners appropriate web based project software program even when no findings or damage caused.
- B. The General Contractor is responsible to protect the interior and exterior of all Owner Furnished Contractor Installed (OFCI), Contractor Furnished Contractor Installed (CFCI) equipment, and final finishes from damage until the build has accomplished PFHO. Any damage to completed work caused by other trade damage, improper storage, improper protection, and negligence of any kind shall be the responsibility of the General Contractor to manage remediation of the issue until resolution



APPENDIX A



General Contractor Quality Control Plan Template

ABSTRACT

This document is a guide to assist the General Contractor in developing their Quality Control Plan. The GC is responsible for the completeness of the required sections as well as the addition of any additional sections as needed to meet project and quality requirements.



Instructions to General Contractor:

Amazon Web Services (AWS) is committed to delivering and providing their customers with a quality product and quality experience. Quality Control Plans help AWS plan effectively and help eliminate deliverables that need to be re-evaluated or re-worked. Quality work saves time and shows the dedication one has to the project and task at hand.

This template is to be used to develop your **site-specific** Quality Control Plan. The format of your plan may deviate from the format of this template, however the information requested from this template shall be the minimum provided. Each section contains background information on the specific subject and also directions to the General Contractor (*italicized*) on how to proceed when developing their QC Plan. Please submit your finalized Quality Control Plan through the appropriate web based project service as defined by the contract documents.

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1. Introduction

This section should describe your commitment to Quality and commitment to delivering a product that you are proud of. Include any mission statements your company may have or any Quality goals you and your team strive to accomplish.

2. Quality Policy

This section should describe how you will implement the quality control plan to ensure AWS quality standards are achieved. Include specific details, actions, and reporting procedures to ensure adherence to this plan.

3. Project Organizational Structure and Responsibilities

*Please show your **Site-Specific** Organization structure and reporting precedence. Provide the roles and responsibilities each team member will undertake. Provide the resumes for the onsite team with information that demonstrates individual competencies, background knowledge and years each individual has directly supported your quality delivery of work. Please acknowledge, describe, and provide applicable templates on how you plan to accomplish the following:*

Quality Control starts at the top of an organization and continues all the down to the individual in the field. AWS has found that in order for a quality program to be successful, roles and responsibilities must be established and ownership must be taken. The quality program must have a manager/champion that oversees the quality program and ensures:

- Work is being planned properly
- Materials and equipment are being installed correctly
- Inspections of installed work are taking place
- Deficiencies are being properly tracked and rectified
- The final product/activity is defect free and match the contract documents.

4. Quality Program

The basic elements of a Quality Program are Administration, Material Delivery/Equipment Protection procedures, Testing and Inspection Plans, and Project Close Out. The following information is the minimum information required, please expand upon these topics in accordance with the project specifications to ensure AWS quality standards are achieved:

2. Administration

This portion of the QC Plan will discuss communication and tracking of quality issues. Please acknowledge, describe, and provide applicable templates on how you plan to accomplish the following:

1. Meetings

- a. QA/QC kick off meeting (Prior to Construction Start Date)
- b. Owner/Architect/Contractor (OAC) weekly meetings.



- c. Regularly scheduled Mechanical- Electrical-Plumbing (MEP) Coordination meetings
- d. Regularly scheduled Quality Assurance (QA)/Quality Control (QC) meetings
- e. Regularly scheduled Building Information Modeling (BIM) and As-Built drawing meetings

2. Procore

The 'AWS Infrastructure' instance of Procore will be the primary document storage and submission program for this project. Procore will contain and reflect the most recent information and will be maintained and updated daily. Any official material submissions and inspection/inquiries related to the project must be submitted through Procore. At a minimum the following items shall be utilized and updated:

- a. Correspondence
- b. Request for Information (RFI)
- c. Submittals
- d. Inspections to include: Third party inspection results, laboratory reports, visual inspections etc.
- e. Incidents
- f. Observations (Deficiency tracking tool)
- g. Drawings
- h. Specifications
- i. Emails
- j. Transmittals
- k. Punch/Snag List
- l. Meetings
- m. Daily Logs and Action Plans
- n. Schedule

*AWS may add additional software Tools to the 'AWS Infrastructure' platform at any time. Suppliers are expected to adopt and utilize any additional Tools which may be added to the platform mid-project.

3. QC Schedules

Schedules are a way to easily recognize and plan for required tests and inspections once certain conditions are met. In order to properly plan and not miss required activities the following QC activities shall be included in the project schedule:

- a. Submittal Submission timelines
- b. Critical Activities/ Definable Features of Work
- c. All Testing/Inspections/Hold Points

3 Material Delivery and Equipment Protection

Material Deliveries are an easily overlooked inspection that have potential of causing project delay and deficient work. Develop a plan to address the following:

3.1 Delivery and handling of equipment

- A. Receipt Inspection Form (RIF). Refer to the General Commission Specification Section 019113 (AMER/APAC/EMEA) for details and Procore for inspection templates.



- B. Equipment/Material must be inspected for damage and cleanliness upon delivery and again prior to installation.
- 3.2 Onsite/Off-site storage
 - A. Use of water-tight containers or temporary storage buildings with environmental controls.
 - B. Material/Equipment stored on dunnage and not placed directly on the ground.
 - C. Storage locations are secure from vandalism and theft.
- 3.3 Equipment and material protection during storage and after installation per the latest version of the Construction General Requirements to include:
 - A. Protection from elements during storage
 - B. Protection from other trade damage
 - C. Protection of installed materials and equipment during phases of the building envelope not being completely dried in or complete.
 - D. No installation of critical equipment when the building envelope is not completely dried in and protected from external elements.

4 **Testing and Inspection Plans**

This portion of the QC Plan should consist of your testing and inspection plans for each major feature of work and equipment energizations. The following information is the minimum information required, please provide the applicable templates and procedures for the following:

4.1 **Testing Agencies**

If third party Testing Agencies are required to perform specific tests and inspections on this project and under contract by the GC, submit their qualifications as a submittal through Procore. Third Party inspectors shall utilize AWS templates inside Procore and shall also submit their applicable testing plans for review/approval.

4.2 **Inspection Plans**

Refer to the project specifications and your Testing/Inspection Schedule to compile a list of all applicable tests to be performed. Ensure all appropriate testing/inspecting templates are uploaded in Procore. At a minimum, please provide a plan for the following tests/inspections as applicable to the project:

- a. Foreign Object Debris (FOD) Inspection Plan
- b. List of all required equipment and electric panels to be inspected
- c. Procedure for marking and securing equipment and electric panels after inspection and re-inspecting should the equipment be opened after inspection
- d. Testing and Inspection plan for the Exterior Drainage System
- e. Testing and Inspection plan for the Underground Utility System
- f. Testing and Inspection plan for the Foundation System
- g. Soil Stability
- h. Concrete Testing
- i. Pre-Concrete Pour Inspections
- j. Re-bar Inspections
- k. Testing and Inspection plan for Structural Systems
- l. Testing and Inspection plan for Doors and Hardware
- m. Testing and Inspection plan for Mechanical Systems
- n. Testing and Inspection plan for Electrical Systems
- o. Testing and Inspection Plan for Plumbing Systems
- p. Testing and Inspection plan for temporary and permanent Fire and Life Safety Systems



- q. Testing and Inspection plan for Elevators
- r. Testing and Inspection plan for Architectural Finishes
- s. Testing and Inspection plan for Commissioning activities
- t. Conduct Pre-Commissioning tests and inspections prior to Handoff to Commissioning (H2C) milestone.
- u. Testing and Inspection plan for Fiber Early Access (FEA) milestone
- v. Conduct Pre-FEA tests and inspections prior to official milestone.
- w. Testing and Inspection plan for Network Early Access (NEA) milestone
- x. Conduct Pre-NEA tests and inspections prior to official milestone.

5 **Project Close Out**

The following information is the minimum information required for Project Close Out, create a plan and narrative on how the following will be accomplished:

- 5.1 Punch/Snag List also known as Master/Architectural Punch List
 - A. Conduct Pre-Punch/Snag list inspections prior to official Architecture Punch List (APL) walk.
 - B. Utilize Procore's Punch/Snag List function
 - C. Resolve all Master Punch List (MPL) items prior to Power Facility Hand Off (PFHO) as described in AMER Specification Section 017700 Closeout Procedures.
- 5.2 Closeout Submittals in accordance with AMER Specification Section 017823, Operation and Maintenance Data.



Appendix B

AWS Quality Control Testing Inspections and Checklists

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END OF SECTION 014000

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ BIM
 Location/Grid _____ Document Number: QC-BIM-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2023-01-30
 Document Description: Quality Control

A. Items to be Inspected

Verify the following aspects of the Submitted BIM files

Item	Description	PASS	FAIL	N/A	Comments
GENERAL					
1	File name complies with AWS requirements	☐	☐	☐	
2	Model eTransmitted correctly as a Central Model, transmittal and error report included	☐	☐	☐	
3	Revit starting view: Opening view set to Starting View and the family is the AWS Starting View	☐	☐	☐	
4	Revit Project information has been updated for this specific project	☐	☐	☐	
5	AWS title block is in use and is the correct size for sheet printing at 1:1 scale	☐	☐	☐	
6	Revision is updated for As-Built	☐	☐	☐	
7	File types comply with AWS requirements	☐	☐	☐	
8	All BIM files are included in the submission as listed in the BEP Model Register and as required in the AWS EIR	☐	☐	☐	
GEO-REFERENCE					
9	Project North - Rotation set per Civil and plans show Generator Yard on the bottom of the page	☐	☐	☐	
10	Survey point and shared coordinates are established from Civil and adopted by all discipline models	☐	☐	☐	
11	Levels - Copy monitored by all disciplines, coordinated, and on the correct work set	☐	☐	☐	
12	Grids - Copy monitored by all disciplines, coordinated, and on the correct work set				
CLEAN					
13	File size is under 350mb or documented and approved by AWS	☐	☐	☐	
14	All unused content has been purged				
15	All warnings and errors are cleared or documented and approved by AWS	☐	☐	☐	
16	All elements have been reviewed and are located / connected correctly	☐	☐	☐	
17	All content is categorized correctly and no critical equipment is General Models category				
18	All elements are associated with the correct level	☐	☐	☐	
19	Federated Navisworks includes the appropriate clash tests. Clashes have either been resolved or approved with comment indicating why the clash was approved and party who approved. AWS approval is also required.	☐	☐	☐	
20	All models have resolved self interfering clashes	☐	☐	☐	
21	All models have coordinated internal content	☐	☐	☐	
22	Project units complies with AWS requirements	☐	☐	☐	
23	Views not in use or for work in progress have been removed	☐	☐	☐	
LINKS					
24	Revit models are all included are on the correct work set	☐	☐	☐	
25	IFC files are properly linked in RVT container file and are on the correct work set	☐	☐	☐	
26	Use of CAD file has been approved by AWS	☐	☐	☐	
27	Images, other files are kept to a minimum and approved by AWS	☐	☐	☐	
GRAPHICS					
28	Sheet numbering complies with AWS requirements	☐	☐	☐	
29	Sheet list is up to date and includes all sheets	☐	☐	☐	
30	Live schedules are derived from native model content	☐	☐	☐	
31	Dimension precision complies with AWS requirements	☐	☐	☐	
WORK SET					
32	Any Work sets added to models are documented in the BEP with name and use defined	☐	☐	☐	
33	All model content is on the correct Work set	☐	☐	☐	
PHASING					
34	All model content is on the correct Phase	☐	☐	☐	
35	All models have the phases mapped to the phases in the linked models	☐	☐	☐	
MODEL					
36	Federated Navisworks includes the appropriate clash tests. Clashes have either been resolved or approved with comment indicating why the clash was approved and party who approved. AWS approval is also required.	☐	☐	☐	

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------|
| 37 | All models have resolved self interfering clashes | ☐ | ☐ | ☐ | _____ |
| 38 | All models have coordinated internal content | ☐ | ☐ | ☐ | _____ |
| 39 | Level of Development (LOD) complies with AWS Minimum Modeling Matrix (M3) requirements with correct metadata | ☐ | ☐ | ☐ | _____ |
| 40 | Field conditions - Model reflects field conditions as installed and evidence is provided for verification. | ☐ | ☐ | ☐ | _____ |

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

BIM Coordinator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control File No.	Checklist
QC-E-01	MV CABLE TERMINATIONS
QC-E-02	LV MAINS CABLE TERMINATIONS
QC-E-03	CABLE CONTAINMENT
QC-E-04	LIGHTING SYSTEMS
QC-E-05	PVC / STEEL CONDUIT
QC-E-06	
QC-E-07	
QC-E-08	
QC-E-09	
QC-E-10	

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Equipment Tag _____ Document Number: QC-E-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

i. Equipment Information

Manufacturer _____ Manuf / Serial#: _____ Ref. Dwg # & Date _____
 Current Rating: _____ KAIC Rating: _____ Withstand Rating KA _____
 Type/Style: _____ Voltage Rating [kV]: _____ BIL Rating [kV] _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____
3	Manufacturers approved technical data sheet	_____	_____	_____

B. Project Requirements

Verify the following installation quality checks:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Weldings procedures approved.	☐	☐	☐	_____
2	NDE procedures approved.	☐	☐	☐	_____
3	Welders are qualified to the appropriate code and procedure.	☐	☐	☐	_____

C. Items to be Checked

Verify the following installation quality checks with the equipment de-energized (Power OFF);

Verified

The figures marked in red must be changed to suit the Approved OEM MV termination TDS

Item	Description	YES	NO	N/A	Comments
1	Switchgear is inspected for damage and any damage found recorded in Procore Observations prior to removing cable chamber doors and/or covers	☐	☐	☐	_____
2	Cable chamber is sealed off to prevent dust, swarf, tools and/or cable cuts from falling into lower chambers and/or exposed terminals and/or bus bars.	☐	☐	☐	_____
3	Cable chamber doors and/or covers and flash guards have been removed and stored safely in designated containers/storage boxes.	☐	☐	☐	_____
4	Non-ferrous gland plate fitted in and is sealed meeting IP rating of switchboard.	☐	☐	☐	_____
5	Correct type of cable glands has been installed as per client specifications and manufacturer instructions using approved tooling only.	☐	☐	☐	_____
6	MV Cables are supported in Cable Trays/Ladders using certified fault rated cable cleats. Cable cleats are installed at distances as required by type test design for the required peak fault current. Record the distances and fault levels of the cleat	☐	☐	☐	_____
7	Cables have been inspected for visible damage to insulation	☐	☐	☐	_____
8	Cables have been point-to-point continuity tested and identified using approved cable markers (Cable Tags).	☐	☐	☐	_____
9	Minimum bending radius has not been exceeded when forming and dressing cables from source to destination.	☐	☐	☐	_____
10	Confirm that the exposed armor beneath the breakout is no longer than 80mm	☐	☐	☐	_____
11	Confirm that the semi-conducting screen is 50mm	☐	☐	☐	_____
12	Confirm that the distance between the center of the breakout and the start of the semi-conducting screen is 200mm	☐	☐	☐	_____
13	Confirm the proper installation of the lug sealing tube	☐	☐	☐	_____
14	Confirm the proper installation of the non-tracking weather resistant tubing	☐	☐	☐	_____
15	Confirm the proper installation of the stress control tubing	☐	☐	☐	_____
16	Confirm the proper installation of the copper braid for tape shield	☐	☐	☐	_____
17	Confirm the proper installation of the breakout	☐	☐	☐	_____
18	Confirm the proper installation of the Skirt	☐	☐	☐	_____
19	Confirm the proper installation of the void filling Mastic	☐	☐	☐	_____
20	Confirm the proper installation of armor clamps for the connection of the Armor and the braid	☐	☐	☐	_____
21	Confirm the proper installation of PVC tape covering over armor clamps	☐	☐	☐	_____
22	Confirm the proper installation of the Braid for Armor earthing	☐	☐	☐	_____
23	Confirm that the braid is exiting the breakout from the bottom	☐	☐	☐	_____

Item	Description	YES	NO	N/A	Comments
24	Confirm that the minimum length from the breakout to the start of the lug of the indoor straight connection is 600mm	☐	☐	☐	
25	Confirm that the minimum length from the breakout to the start of the lug of the indoor crossed connection is 800mm	☐	☐	☐	
26	Confirm that the minimum clearance between A phase and B phase is 50mm	☐	☐	☐	
27	Confirm that the minimum clearance between B phase and C phase is 50mm	☐	☐	☐	
28	Confirm that the minimum clearance between C phase and A phase is 50mm	☐	☐	☐	
29	Confirm that the minimum clearance between A, B, C phase and Ground is 35mm	☐	☐	☐	
30	Confirm that the minimum clearance between phase skirts is 25mm	☐	☐	☐	
31	Confirm the proper installation of the lugs.	☐	☐	☐	
32	Confirm the die number and number of crimps is in line with the OEM specifications	☐	☐	☐	
33	Confirm connections are torqued to the OEM specifications and a torque mark is present	☐	☐	☐	
34	All heat shrink insulation sleeves are cut neatly to size and correctly installed not covering the copper surface area between lug and bar.	☐	☐	☐	
35	Confirm the cable screens continue through the gland.	☐	☐	☐	
36	All labels have been applied to the cables minimum 100mm distance from cable gland shroud. Reading left to right/bottom to top.	☐	☐	☐	
37	Panel chambers have been vacuumed and cleaned.	☐	☐	☐	

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1 _____

2 _____

3 _____

4 _____

5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Equipment Tag _____ Document Number: _____ QC-E-02.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____ 2022-08-06
 Document Description: Quality Control

i. Equipment Information

Manufacturer _____ Manuf / Serial#: _____ Ref. Dwg # & Date _____
 Current Rating: _____ KAIC Rating: _____ Withstand Rating KA _____
 Type/Style: _____ Voltage Rating [kV]: _____ BIL Rating [kV] _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____
3	Manufacturers approved technical data sheet	_____	_____	_____

B. Project Requirements

Verify the following installation quality checks:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Weldings procedures approved.	☐	☐	☐	_____
2	NDE procedures approved.	☐	☐	☐	_____
3	Welders are qualified to the appropriate code and procedure.	☐	☐	☐	_____

C. Items to be Checked

Verify the following installation quality checks with the equipment de-energized (Power OFF);

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Switchgear/DB is inspected for damage and any damage found recorded in Procure Observations prior to removing cable chamber doors and/or covers	☐	☐	☐	_____
2	Cable chamber is sealed off to prevent dust, swarf, tools and/or cable cuts from falling into lower chambers and/or exposed terminals and/or bus bars.	☐	☐	☐	_____
3	Cable chamber doors and/or covers and flash guards have been removed and stored safely in designated containers/storage boxes.	☐	☐	☐	_____
4	Non-ferrous gland plate fitted in and is sealed meeting IP rating of switchboard.	☐	☐	☐	_____
5	Correct type of cable glands has been installed as per client specifications and manufacturer instructions using approved tooling only.	☐	☐	☐	_____
6	Nylon sealing washers and cable gland shrouds have been fitted to all cables and tightened/sealed meeting IP rating of switchboard.	☐	☐	☐	_____
7	Cables have been inspected for visible damage to insulation	☐	☐	☐	_____
8	Cables have been point-to-point continuity tested and identified using approved cable markers (Cable Tags).	☐	☐	☐	_____
9	Minimum bending radius has not been exceeded when forming and dressing cables from source to destination.	☐	☐	☐	_____
10	Verify cable terminations and lugs meet UL listing for conductor size and material per installation and specifications.	☐	☐	☐	_____
11	Core lugs/ferrules have been correctly crimped using an approved HEX crimping tool and are not under or over crimped.	☐	☐	☐	_____
12	Number of crimps applied matches installation guidelines	☐	☐	☐	_____
13	All heat shrink insulation sleeves are cut neatly to size and correctly installed not covering the copper surface area between lug and bar.	☐	☐	☐	_____
14	All labels have been applied to the cables minimum 100mm distance from cable gland shroud. Reading left to right/bottom to top.	☐	☐	☐	_____
15	Panel chambers have been vacuumed and cleaned.	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____

Item	Description	YES	NO	N/A	Comments
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1 _____

2 _____

3 _____

4 _____

5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Location/Grid _____ Document Number: _____ QC-E-03.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____ 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Checked

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Cable tray/ladder/basket and accessories material is as per the approved specifications	☐	☐	☐	_____
2	Cable containment supports are installed as per approved shop drawings and OEM installation instructions	☐	☐	☐	_____
3	Cable containment is installed in the correct location as per site drawings/plans	☐	☐	☐	_____
4	Cable containment is installed as per site drawings/plans with adequate spacing and clearances to provide access to other services	☐	☐	☐	_____
5	Cable containment supports are secured using approved seismic restraint as per design specifications	☐	☐	☐	_____
6	Cable containment supports and cable tray/ladder/baskets are installed level with equal spacing between supports	☐	☐	☐	_____
7	Cable containment is marked/tagged regularly at a minimum of 3m spaces to indicate its use	☐	☐	☐	_____
8	Cable containment has no sharp edges	☐	☐	☐	_____
9	Cut containment supports and cable tray/ladder/baskets have been painted to stop exposed metal rusting.	☐	☐	☐	_____
10	Adequate insulation considered for cable containment where passing near hot surfaces	☐	☐	☐	_____
11	Cable tray/ladder/basket installation shall ensure earth continuity by connection across each joint. Installation cannot rely on the metallic joint connectors.	☐	☐	☐	_____
12	Earth continuity is maintained by using earth cable across cable tray/ladder/basket joint.	☐	☐	☐	_____
13	Cable tray/ladder/basket is adequate for the cables installed with 30% spare space for future cables	☐	☐	☐	_____
14	All external cables trays have mechanical protection via covers	☐	☐	☐	_____
15	Adequate space as per design shall be kept between various types of cable containment (MV/LV/Controls etc.)	☐	☐	☐	_____
16	Fire barriers provided as per design wherever trunking/conduits passing through floor or fire rated walls	☐	☐	☐	_____
17	MV and LV Main and PDC submain cables are supported in cable tray/ladder using certified fault rated cable cleats. Cable cleats are installed at distances as required by type test design for the required peak fault current as per the approved fault study	☐	☐	☐	_____
18	All threaded items have been capped below supports.	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

- _____
- _____
- _____

4 _____

5 _____

E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Location/Grid _____ Document Number: _____ QC-E-04.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____ 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Checked

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	All lighting fixtures IP rating is correct for installed location (internal/external) and as per design	☐	☐	☐	_____
2	Lighting installation and mounting height as per approved drawings	☐	☐	☐	_____
3	All fixtures mounted properly and secured	☐	☐	☐	_____
4	Confirm number and type of fixtures are correct and in location as per approved drawings	☐	☐	☐	_____
5	All fixtures are labelled correctly	☐	☐	☐	_____
6	No external damage to all fixtures	☐	☐	☐	_____
7	All spare cable entries (if any) to fixtures plugged correctly	☐	☐	☐	_____
8	Confirm lighting switch installed are correct type without any damage	☐	☐	☐	_____
9	All switches are labelled correctly	☐	☐	☐	_____
10	All fixtures earthed as per design requirements	☐	☐	☐	_____
11	Emergency lighting fixtures are labelled and installed at correct location as per approved drawings	☐	☐	☐	_____
12	Lighting system is tested functionally for normal/emergency scenario are as per design. Perform spot checks and identify any non-conformities/dark spots	☐	☐	☐	_____
13	Compliance shall be checked to local standard and contract specifications	☐	☐	☐	_____
14	Confirm the battery backups work when normal power is cut-off from the emergency lighting fixtures	☐	☐	☐	_____
15	Ensure the lighting are fed from the correct distribution boards/circuit number as per approved shop drawings	☐	☐	☐	_____
16	Insulation Resistance test for Final Sub circuit cables has been completed and submitted	☐	☐	☐	_____
17	Proper containment system support for the light	☐	☐	☐	_____
18	As-built/redlines are correct with all fixtures and switches labelled	☐	☐	☐	_____
19	Occupancy sensors are functionality tested.	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____



LIGHTING SYSTEMS

QC-E-04.01

General Contractor _____
Witnessed By _____

Signature _____
Signature _____

Date (YYYY-MM-DD) _____
Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Location/Grid: _____ Document Number: QC-E-05.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	PVC / Steel conduit and accessories material is as per the approved specifications	☐	☐	☐	_____
2	PVC / Steel conduit supports are installed as per approved shop drawings and OEM installation instructions	☐	☐	☐	_____
3	PVC / Steel Conduits are installed level with equal spacing between supports	☐	☐	☐	_____
4	BMS PVC / Steel conduit is marked/tagged with yellow indicators regularly at a minimum of 3m spaces to indicate it use outlined in Control Specification clause 2.2 D.1	☐	☐	☐	_____
5	EPMS PVC / Steel conduit is marked/tagged with yellow indicators regularly at a minimum of 3m spaces to indicate it use outlined in Control Specification clause 2.2 D.2	☐	☐	☐	_____
6	Cut steel Conduits have been painted to stop exposed metal rusting.	☐	☐	☐	_____
7	Adequate insulation considered for cable containment where passing near hot surfaces	☐	☐	☐	_____
8	Fire barriers provided as per design wherever conduits pass through floor or fire rated walls	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control File No.	Checklist	Version	Latest Update
QC-FLS_FAD-01	SMOKE DETECTION CHECKLIST	2	23-Feb-23
QC-FLS_FAD-02	ASPIRATING SMOKE DETECTION CHECKLIST	2	23-Feb-23
QC-FLS_FAD-03	HEAT DETECTION CHECKLIST	2	23-Feb-23
QC-FLS_FAD-04	BEAM DETECTION CHECKLIST	2	23-Feb-23
QC-FLS_FAD-05	FIRE ALARM CHECKLIST	2	23-Feb-23

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: _____ QC-FLS_FAD-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Smoke detectors design criteria - spacing limit and sensitivity	☐	☐	☐	_____
4	List of areas/rooms provided with smoke detectors	☐	☐	☐	_____
5	Smoke detectors included in fire alarm schematic sheet	☐	☐	☐	_____
6	Smoke detectors installation details on ceiling slab (true ceiling) and false ceiling	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Smoke Detectors					
1	Smoke detectors provided as per approved drawings	☐	☐	☐	_____
2	Smoke detectors are labelled in a permanent tag	☐	☐	☐	_____
3	Smoke detectors are not obstructed or covered with plastic/tape	☐	☐	☐	_____
4	Smoke detectors are installed in secured position and not showing sign of damage	☐	☐	☐	_____
5	Smoke detectors do not recess into mounting surface	☐	☐	☐	_____
6	Smoke detectors are accessible for service and maintenance	☐	☐	☐	_____
7	Smoke detectors zoning indicated in fire control panel and other mimic panels	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Operational test for smoke detectors conducted, attach test report as per NFPA 72 Section 7.5.6	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_FAD-02.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
4	Aspirating smoke detectors design criteria - spacing limit and sensitivity	☐	☐	☐	_____
5	List of areas/rooms provided with aspirating smoke detectors	☐	☐	☐	_____
6	Aspirating smoke detectors included in fire alarm schematic sheet	☐	☐	☐	_____
7	Aspirating smoke detectors installation details on ceiling slab (true ceiling) and false ceiling	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Aspirating Smoke Detectors					
1	Sampling holes location as per approved drawings	☐	☐	☐	_____
2	Sampling air pipe are firmly connected to the air inlet ports	☐	☐	☐	_____
3	Air sampling pipe are labelled at every branches, other side of wall penetration and in ceiling	☐	☐	☐	_____
4	Sampling air pipe are not glued and obstructed	☐	☐	☐	_____
5	Sampling air points not showing sign of damage	☐	☐	☐	_____
6	All pipework is secured at Aspirator Unit	☐	☐	☐	_____
7	Joints and bracket spacing around panel pipework are secure	☐	☐	☐	_____
8	Sampling panel is operating normally and not showing sign of physical damage	☐	☐	☐	_____
9	Sampling panel is accessible and not obstructed by any fixed permanent object	☐	☐	☐	_____
10	Sampling panel is not covered up by plastic or tape	☐	☐	☐	_____
11	Sampling panel clear of all trouble signals	☐	☐	☐	_____
12	ASDS Panel provided with battery bank for emergency backup	☐	☐	☐	_____
13	ASDS Alarm to be marked for (Alarm, Alert, Fire-1, Fire-2)	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Operational test for aspirating smoke detectors conducted, attach test report as per NFPA 72 Section 7.5.6	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: _____ QC-FLS_FAD-03.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Heat detectors design criteria - spacing limit and sensitivity	☐	☐	☐	_____
4	List of areas/rooms provided with heat detectors	☐	☐	☐	_____
5	Heat detectors included in fire alarm schematic sheet	☐	☐	☐	_____
6	Heat detectors installation details on ceiling slab (true ceiling) and false ceiling	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Heat Detectors					
1	Heat detectors provided as per approved drawings	☐	☐	☐	_____
2	Heat detectors are labelled in a permanent tag	☐	☐	☐	_____
3	Heat detectors are not obstructed or covered with plastic/tape	☐	☐	☐	_____
4	Heat detectors are installed in secured position and not showing sign of damage	☐	☐	☐	_____
5	Heat detectors do not recess into mounting surface	☐	☐	☐	_____
6	Heat detectors are accessible for service and maintenance	☐	☐	☐	_____
7	Heat detectors zoning indicated in fire control panel and other mimic panels	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Operational test for heat detectors, attach test report as per NFPA 72 Section 7.5.6 (obtain a copy of Fire Alarm System Record of Completion from contractor)	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified YES	Verified NO	Verified N/A	Comments
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: QC-FLS_FAD-04.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Beam detectors design criteria - spacing limit and sensitivity	☐	☐	☐	_____
4	List of areas/rooms provided with different detectors	☐	☐	☐	_____
5	Beam detectors included in fire alarm schematic sheet	☐	☐	☐	_____
6	Beam detectors installation details on ceiling slab (true ceiling) and false ceiling	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Beam Detectors					
1	Beam detectors provided as per approved drawings	☐	☐	☐	_____
2	Beam detectors reflector and receiver are not obstructed or covered with plastic/tape	☐	☐	☐	_____
3	Beam detectors are not obstructed by any obstruction hanging in the mid path of detection	☐	☐	☐	_____
4	Beam detectors are installed in secured position and not showing sign of damage	☐	☐	☐	_____
5	Beam detectors do not recess into mounting surface	☐	☐	☐	_____
6	Beam detectors are accessible for service and maintenance	☐	☐	☐	_____
7	Beam detectors zoning indicated in fire control panel and other mimic panels	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Operational test for beam detectors, attach test report as per NFPA 72 Section 7.5.6 (obtain a copy of Fire Alarm System Record of Completion from contractor)	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_FAD-05.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Design criteria - lists of items provided in fire alarm system	☐	☐	☐	_____
4	Design criteria - location and provision of field devices (detectors, manual call points, speaker strobe, communication system)	☐	☐	☐	_____
5	Design criteria for aspirating smoke detectors	☐	☐	☐	_____
6	Design criteria - List of systems that report to fire alarm	☐	☐	☐	_____
7	Design criteria - List of systems integrated to fire control panel	☐	☐	☐	_____
8	Fire alarm schematic sheet	☐	☐	☐	_____
9	Installation details for fire alarm devices	☐	☐	☐	_____
10	Fire Alarm Matrix (Cause & Effect Matrix) showing activating devices and activation sequence	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
------	-------------	-----	----	-----	----------

Speaker & Strobe

1	Location of speaker & strobe as per approved drawings	☐	☐	☐	_____
2	Speaker & strobe devices are not obstructed or covered with plastic/tape	☐	☐	☐	_____
3	Speaker & strobe not recessed into mounting surface and not showing sign of damage	☐	☐	☐	_____
4	Speaker & strobe are accessible for service and maintenance	☐	☐	☐	_____

Fire Alarm Panel

6	Location of fire alarm panel per approved drawings	☐	☐	☐	_____
7	Fire alarm panels are labelled in a permanent tag	☐	☐	☐	_____
8	Fire alarm panel not showing signs of physical damage or any wiring error	☐	☐	☐	_____
9	Fire alarm panel showing all initiating devices zone e.g. sprinkler zone, detection zone, manual	☐	☐	☐	_____
10	Fire alarm panel is accessible by emergency response personnel and not obstructed	☐	☐	☐	_____
11	Fire alarm panel power breaker location is clearly identified in each fire alarm panel	☐	☐	☐	_____

Manual Call Point

11	Location of manual call points per approved drawings	☐	☐	☐	_____
12	Installation height of manual call points as per approved drawings	☐	☐	☐	_____
13	Manual call points not obstructed and not showing sign of physical damage	☐	☐	☐	_____
14	Manual call points not covered with plastic or tape	☐	☐	☐	_____
15	Manual call points are labelled with permanent tags	☐	☐	☐	_____

Emergency Communication System

16	One-way communication system are provided as per approved drawings	☐	☐	☐	_____
17	Two-way communication system are provided as per approved drawings	☐	☐	☐	_____
18	Emergency communication system are not obstructed and showing sign of physical damage	☐	☐	☐	_____
19	Emergency communication system are functioning and operating normally	☐	☐	☐	_____
20	Emergency communication system are mounted securely on wall	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Functional test for speaker strobe, attach test report as per NFPA 72 Section 7.5.6 (obtain a copy of Fire Alarm System Record of Completion from contractor)	☐	☐	☐	_____
2	Functional test for manual call point, attach test report as per NFPA 72 Section 7.5.6 (obtain a copy of Fire Alarm System Record of Completion from contractor)	☐	☐	☐	_____
3	Functional test for emergency communication system, attach test report as per NFPA 72 Section 7.5.6 (obtain a copy of Fire Alarm System Record of Completion from contractor)	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Verified

Item	Description	YES	NO	N/A	Comments
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1 _____

2 _____

3 _____

4 _____

5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____	Signature _____	Date (YYYY-MM-DD) _____
General Contrator _____	Signature _____	Date (YYYY-MM-DD) _____
Witnessed By _____	Signature _____	Date (YYYY-MM-DD) _____

Quality Control File No.	Checklist	Version	Latest Update
QC-FLS_SUP-01	WET SPRINKLERS CHECKLIST	2	23-Feb-23
QC-FLS_SUP-02	PRE-ACTION SPRINKLERS CHECKLIST	2	23-Feb-23
QC-FLS_SUP-03	FIRE HYDRANT & HOSE REEL CHECK LIST	2	23-Feb-23
QC-FLS_SUP-04	FIRE PUMP CHECKLIST	2	23-Feb-23
QC-FLS_SUP-05	GAS SUPPRESSION CHECKLIST	2	23-Feb-23
QC-FLS_SUP-06	FIRE EXTINGUISHER CHECKLIST	2	23-Feb-23
QC-FLS_SUP-07	WATER MIST CHECKLIST	2	23-Feb-23

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_SUP-01.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Hazard Occupancy Classification	☐	☐	☐	_____
4	Sprinkler head type and activation temperature rating	☐	☐	☐	_____
5	Sprinkler pipe sizes and lengths	☐	☐	☐	_____
6	Sprinkler design criteria: density and area of operation	☐	☐	☐	_____
7	Sprinkler spacing limits	☐	☐	☐	_____
8	Hydraulic flow calculation	☐	☐	☐	_____
9	Sprinkler valve location	☐	☐	☐	_____
10	Schematic diagram	☐	☐	☐	_____
11	Sprinkler Installation Details/Specification	☐	☐	☐	_____
12	Piping and fittings information	☐	☐	☐	_____
13	Sprinklers equipment schedule - Tag no. and location	☐	☐	☐	_____
14	Alarm check valve assembly	☐	☐	☐	_____
15	Water tank details and puddle flanges installation details	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
<u>Sprinkler heads and piping</u>					
1	Check the location of sprinkler heads per approved drawings	☐	☐	☐	_____
2	Check the location of sprinkler valves per approved drawings	☐	☐	☐	_____
3	Check the sprinklers are not obstructed by any adjacent structural beams, columns and other horizontal or vertical obstructions	☐	☐	☐	_____
4	Second layer sprinklers provided below obstructions at ceiling level. E.g. busducts and	☐	☐	☐	_____
5	Second layer sprinklers without false ceiling to be provided with escutcheons or cover plates	☐	☐	☐	_____
6	Check sprinkler heads, all piping and fitting are not showing sign of leakage, physical damage and loss of fluid in glass bulb	☐	☐	☐	_____
7	Check color of bulb fluid for different sprinkler heads (68C - red, 93C - green)	☐	☐	☐	_____
8	Check sprinkler heads are not covered by any paintings or coatings	☐	☐	☐	_____
9	Check pipe supports and hangers are not damaged, loose or unattached	☐	☐	☐	_____
10	Check pipe and fittings are not subjected to external loads resting/hanging from the pipe	☐	☐	☐	_____
11	Check that sprinklers head and piping's are accessible for service and maintenance	☐	☐	☐	_____
12	Check that firestop/sealant is provided for pipe penetration through walls	☐	☐	☐	_____
13	Check waterflow switch and supervisory signal devices are free of physical damage and function	☐	☐	☐	_____
14	Check sprinkler zones and location are indicated in main Fire Alarm Control Panel and	☐	☐	☐	_____
<u>Wet riser and alarm check valve</u>					
15	Check that serial number is provided for alarm check valve and is tagged securely.	☐	☐	☐	_____
16	Check that control valve, drain valve and test valve are provided and marked/labelled	☐	☐	☐	_____
17	Check that pressure gauge is provided for each riser	☐	☐	☐	_____
18	Check that hydraulic design information sign is attached securely to sprinkler riser	☐	☐	☐	_____
19	Check that direction of water flow is indicated	☐	☐	☐	_____
20	Check that air release valve is provided	☐	☐	☐	_____
21	Check that risers and valves are free of obstruction with at least 1m clearance distance	☐	☐	☐	_____
22	Check all valves are not showing sign of leakage and physical damage	☐	☐	☐	_____
23	Check that firestop/sealant is provided for pipe penetration through floors	☐	☐	☐	_____
24	Check that sprinkler valve room is accessible, not locked and not obstructed	☐	☐	☐	_____
25	Check sprinkler valve locations are indicated in main Fire Alarm Control Panel and mimic	☐	☐	☐	_____



WET SPRINKLERS CHECKLIST

QC-FLS_SUP-01

- | | | | | | |
|----|--|--------------------------|--------------------------|--------------------------|-------|
| 26 | Check all valves are accessible from floor or provided with chains. | ☐ | ☐ | ☐ | _____ |
| 27 | Check that all zone locations are indicated in control valves and zone map is posted in | ☐ | ☐ | ☐ | _____ |
| 28 | Risers and valves in riser room are provided with minimum clearance of 36" for access, inspection, service and maintenance purpose | ☐ | ☐ | ☐ | _____ |

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Hydrostatic pressure test for wet sprinkler system. Attach test reports.	☐	☐	☐	_____
2	Hydrostatic pressure test for wet riser system. Attach test reports.	☐	☐	☐	_____
3	Performance test, attach test report including flow test and leak test	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ **Check if supplemental documentation is attached****Checks and Verifications deemed necessary by the responsible party:**

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_SUP-02.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Hazard Occupancy Classification	☐	☐	☐	_____
4	Sprinkler head type and activation temperature rating	☐	☐	☐	_____
5	Sprinkler pipe sizes and lengths	☐	☐	☐	_____
6	Sprinkler design criteria: density and area of operation	☐	☐	☐	_____
7	Sprinkler spacing limits	☐	☐	☐	_____
8	Hydraulic flow calculation	☐	☐	☐	_____
9	Sprinkler valve location	☐	☐	☐	_____
10	Schematic diagram	☐	☐	☐	_____
11	Dry sprinkler Installation Details/Specification	☐	☐	☐	_____
12	Piping and fittings information	☐	☐	☐	_____
12	Pre-action system operational sequence	☐	☐	☐	_____
13	Pre-action valve assembly	☐	☐	☐	_____
14	Sprinklers equipment schedule - Tag no. and location	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
<u>Sprinkler heads and piping</u>					
1	Check the location of sprinkler heads per approved drawings	☐	☐	☐	_____
2	Check the location of sprinkler valves per approved drawings	☐	☐	☐	_____
3	Check the sprinklers are not obstructed by any adjacent structural beams, columns and other horizontal or vertical obstructions	☐	☐	☐	_____
4	Second layer sprinklers provided below obstructions at ceiling level. E.g. busducts and cable trays (Additional sprinkler is required below any fixed obstructions with 48" wide and located 18" or more below a sprinkler - NFPA 13)	☐	☐	☐	_____
5	Second layer sprinklers without false ceiling to be provided with escutcheons or cover plates	☐	☐	☐	_____
6	Check sprinkler heads, all piping and fitting are not showing sign of leakage, physical	☐	☐	☐	_____
7	Check colour of bulb fluid for different sprinkler heads (68C - red, 93C - green)	☐	☐	☐	_____
8	Check sprinkler heads are not covered by any paintings or coatings	☐	☐	☐	_____
9	Check pipe supports and hangers are not damaged, loose or unattached	☐	☐	☐	_____
10	Check if low points (drum drips) or trapper water exists on the pipe network	☐	☐	☐	_____
11	Check that pipes are sloped as per NFPA 13 for draining purpose.	☐	☐	☐	_____
10	Check pipe and fittings are not subjected to external loads resting/hanging from the pipe	☐	☐	☐	_____
11	Check that sprinklers head and pipings are accessible for service and maintenance	☐	☐	☐	_____
12	Check that firestop/sealant is provided for pipe penetration through walls	☐	☐	☐	_____
13	Check waterflow switch and supervisory signal devies are free of physical damage and functional	☐	☐	☐	_____
14	Check sprinkler zones and location are indicated in main Fire Alarm Control Panel and	☐	☐	☐	_____

Dry riser and alarm check valve

15	Check that serial number is provided for alarm check valve and is tagged securely.	☐	☐	☐	_____
16	Check that control valve, drain valve and test valve are provided and marked/labelled	☐	☐	☐	_____
17	Check that pressure gauge is provided for each riser	☐	☐	☐	_____
18	Check that hydraulic design information sign is attached securely to sprinkler riser	☐	☐	☐	_____
19	Check that air release valve is provided	☐	☐	☐	_____
20	Check that risers and valves are free of obstruction with at least 1m clearance distance	☐	☐	☐	_____
21	Check all valves are not showing sign of leakage and physical damage	☐	☐	☐	_____
22	Check that firestop/sealant is provided for pipe penetration through floors	☐	☐	☐	_____
23	Check that sprinkler valve room is accessible, not locked and not obstructed	☐	☐	☐	_____
24	Check sprinkler valve locations are indicated in main Fire Alarm Control Panel and mimic panels	☐	☐	☐	_____
26	Check all valves are accessible from floor or provided with chains.	☐	☐	☐	_____
27	Check that all zone locations are indicated in control valves and zone map is posted in riser room.	☐	☐	☐	_____

28 Risers and valves in riser room are provided with minimum clearance of 36" for access, inspection, service and maintenance purpose ☐ ☐ ☐ _____

Nitrogen Generator

29 Check that nitrogen generators have been installed and functioning properly. ☐ ☐ ☐ _____
 30 Check that nitrogen discharge device is connected and functioning properly ☐ ☐ ☐ _____
 31 Check that pressure regulator and low pressure alarm is provided at gas storage container ☐ ☐ ☐ _____

C. Functional & Site Acceptance Test

Check if folowing tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Hydrostatic pressure test for dry riser. Attach test reports.	☐	☐	☐	_____
2	Hydrostatic pressure test for pre-action sprinklers. Attach test reports.	☐	☐	☐	_____
3	Performance test, attach test report including flow test and leak test	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

FIRE HYDRANT AND HOSE REEL CHECKLIST

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_SUP-03.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Site plan indicate location of external hydrants, internal hydrants and hose reels	☐	☐	☐	_____
4	Drawings to indicate spacing distance/coverage for external hydrants, internal hydrants and hose reels	☐	☐	☐	_____
5	Drawings to specify maximum distance limit from external hydrant to the closest buildings	☐	☐	☐	_____
6	Water supply indicate minimum flow rate of hydrants and hose reels	☐	☐	☐	_____
7	External hydrant Installation Details/Specification	☐	☐	☐	_____
8	Internal hydrant Installation Details/Specification	☐	☐	☐	_____
9	Hydrants equipment schedule - Tag no. and location	☐	☐	☐	_____
10	Hose reel Installation Details/Specification	☐	☐	☐	_____
11	Breeching inlet installation details	☐	☐	☐	_____
12	Schematic diagram	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Internal Hydrants					
1	Check the location of internal hydrants per approved drawings	☐	☐	☐	_____
2	Check the painting colour of internal hydrants	☐	☐	☐	_____
3	Check that internal hydrants are clear of obstructions	☐	☐	☐	_____
4	Check that hydrant box is not locked and internal hydrant can be accessed easily	☐	☐	☐	_____
5	Check that blank cap of hydrants outlets are provided and not defective/corroded	☐	☐	☐	_____
6	Hydrant not damaged and function properly	☐	☐	☐	_____
7	Check height of valve according to installation details	☐	☐	☐	_____
8	Check the condition of handwheel and direction of open/close is indicated	☐	☐	☐	_____
9	Check for any water leakage	☐	☐	☐	_____
10	Check for any damaged piping and control valves	☐	☐	☐	_____
11	Check hydrant connection size and type are in accordance with approved drawings	☐	☐	☐	_____
12	Check breeching inlet/fire department connection assembly are installed and marked per approved drawings	☐	☐	☐	_____
13	Check that breeching inlets/fire department connections are free obstructions and not showing sign of physical damage, corrosion, blockage and water leakage	☐	☐	☐	_____
14	For hydrants inside hose cabinet, doors are not locked and keys are provided	☐	☐	☐	_____
15	For hydrants inside hose cabinet, provide box key break glass with chain	☐	☐	☐	_____
16	Internal hydrant to be provided with label/tag/numbering	☐	☐	☐	_____
External Hydrants					
17	Check the location of external hydrant per approved drawings	☐	☐	☐	_____
18	Check that external hydrants are clear of obstructions	☐	☐	☐	_____
19	Hydrant not damaged and function properly	☐	☐	☐	_____
20	Check that hydrants landing valve and gate valve are free of physical damage/corrosion	☐	☐	☐	_____
21	Check that blank cap of hydrants outlets are provided and not defective/corroded	☐	☐	☐	_____
22	Check for any water leakage	☐	☐	☐	_____
23	Check height of hydrant according to installation details	☐	☐	☐	_____
24	Check hydrant connection size and type are in accordance with approved drawings	☐	☐	☐	_____
25	External hydrant to be provided with label/tag/numbering	☐	☐	☐	_____
Hose Reels					
26	Check the nozzle to operate properly	☐	☐	☐	_____
27	Check all cabinets to be clear of obstruction	☐	☐	☐	_____
28	Check the labelling to be provided for cabinet	☐	☐	☐	_____
29	Check for any water leakage	☐	☐	☐	_____
30	For hose reel inside hose cabinet, doors are not locked and keys are provided	☐	☐	☐	_____
31	For hose reel inside hose cabinet, provide box key break glass with chain	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

FIRE HYDRANT AND HOSE REEL CHECKLIST

Item	Description	YES	NO	N/A	Comments
Internal Hydrants					
1	Pressure test. Attach test report indicating work pressure, test pressure and holding time	☐	☐	☐	
2	Performance test, attached test report including flow test and leak test	☐	☐	☐	
External Hydrants					
3	Performance test. Attach test report indicating static pressure, nozzle size, water flow rate and				
Hose Reels					
4	Check the horizontal water throw of 6m from nozzle	☐	☐	☐	

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

- 1
- 2
- 3
- 4
- 5

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_SUP-04.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Fire pump type and model	☐	☐	☐	_____
4	Drawing showing pump location	☐	☐	☐	_____
5	Pump single line diagram	☐	☐	☐	_____
6	Pump installation details	☐	☐	☐	_____
7	Fire pump equipment schedule - Tag no. and specification	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
1	Fire pump installations are in accordance with manufacturer's installation instructions	☐	☐	☐	_____
2	Pump room heat maintained at 40°F (70°F for diesel engines)	☐	☐	☐	_____
3	Water tank is ready and maximum water level	☐	☐	☐	_____
4	Pump room provided with normal lighting, emergency lighting and exit signs	☐	☐	☐	_____
5	Pump room installation has been commissioned by an approved practitioner	☐	☐	☐	_____
6	Check valve is provided between discharge valve and pump	☐	☐	☐	_____
7	Panel installation complete, all wiring path complete	☐	☐	☐	_____
8	Power control from engine to panel has been connected	☐	☐	☐	_____
9	Supply power to engine panel has been connected	☐	☐	☐	_____
10	Pumps and panels are accessible and not obstructed	☐	☐	☐	_____
11	No physical damage, corrosion, leakage on fire pump systems	☐	☐	☐	_____
12	Check ID tags of equipment and components as per approved shop drawings	☐	☐	☐	_____
13	All pipes have been supported and pipe clamping has been installed	☐	☐	☐	_____
14	Flow meter has been installed	☐	☐	☐	_____
15	Confirm fire pump and jockey pump have separate sensing lines, without shutoff valve	☐	☐	☐	_____
16	Confirm that sensing lines are connected between discharge side of the fire pump and the main shutoff valve	☐	☐	☐	_____
17	Anchoring bolts are installed properly and not slanted	☐	☐	☐	_____
18	Spring isolaters for inertia block are installed properly and not slanted or damaged	☐	☐	☐	_____
19	Pre-test procedure provided and conducted prior to pump performance test	☐	☐	☐	_____
20	Vibration from pump run do not cause damages to other fire pump component	☐	☐	☐	_____
21	Exhaust pipes are insulated based on manufacturer's instructions	☐	☐	☐	_____
22	Exhaust pipes and muffler are independently and adequately supported	☐	☐	☐	_____
23	Exhaust pipes connect to a safe point outside the pump room and arranged to exclude water	☐	☐	☐	_____
24	Pump equipment and panels in pump room are provided with minimum clearance of 36" for access, inspection, service and maintenance purpose	☐	☐	☐	_____

Monitoring

25	Valves are monitored and/or pad locked	☐	☐	☐	_____
26	Tank immersion heater is connected and monitored at Fire Alarm Panel	☐	☐	☐	_____
27	Trace Heating (if provided) is monitored at Fire Alarm Panel	☐	☐	☐	_____

Signage

28	All warning and statutory signs are provided	☐	☐	☐	_____
----	--	--------------------------	--------------------------	--------------------------	-------

Fuel System

29	Fuel fill points (for manual fuel filling) are provided and indicated	☐	☐	☐	_____
30	Fuel control panel (for automated fuel filling) and related illuminations and indications are functional	☐	☐	☐	_____

System Pressure

31	System line pressure is within an acceptable range/PRV setting is acceptable	☐	☐	☐	_____
----	--	--------------------------	--------------------------	--------------------------	-------

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
Hydrants - Main Pumps and Jockey Pumps					
1	Performance test, attach test report indicating flow rate, cut-in and cut-off pressure	☐	☐	☐	
2	Operate main pump and jockey pump in manual mode	☐	☐	☐	
3	Operate main pump and jockey pump in auto mode	☐	☐	☐	
Sprinkler - Main Pumps and Jockey Pumps					
1	Performance test, attach test report indicating flow rate, cut-in and cut-off pressure	☐	☐	☐	
2	Operate main pump and jockey pump in manual mode	☐	☐	☐	
3	Operate main pump and jockey pump in auto mode	☐	☐	☐	

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1 _____

2 _____

3 _____

4 _____

5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_SUP-05.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Location of rooms/spaces provided with clean agent gas suppression system	☐	☐	☐	_____
4	Location of agent storage container	☐	☐	☐	_____
5	Installation details	☐	☐	☐	_____
6	Primary and reserve power supply for gas suppression system	☐	☐	☐	_____
7	Type of clean agent and design concentration	☐	☐	☐	_____
8	Discharge nozzles pipe and size	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
1	Check that clean gas cylinder containers are provided as per design, no changes in volume	☐	☐	☐	_____
2	Check that clean gas cylinder containers not showing any physical damage or corrosion	☐	☐	☐	_____
3	Check if container and valve assembly is fitted with pressure relief valves as per design	☐	☐	☐	_____
4	Check if room enclosure pressure relief is provided as per drawing	☐	☐	☐	_____
5	Check if permanent label/nameplate/markings are provided in containers to indicate extinguishant, gross mass and superpressurized level	☐	☐	☐	_____
6	Check that manual release and abort switches are provided in protected area and egress path	☐	☐	☐	_____
7	Check that manual release switch is accessible and recognizable	☐	☐	☐	_____
8	Check that warning and instruction signs are provided in entrances of protected areas	☐	☐	☐	_____
9	Check that warning and instruction signs are provided inside of protected areas	☐	☐	☐	_____
10	Check that warning and instruction signs are provided outside of cylinder storage rooms	☐	☐	☐	_____
11	Check that discharge nozzles are permanently marked	☐	☐	☐	_____
12	Check that pipe connections are secured	☐	☐	☐	_____
13	Check that all pipe hangers and supports are not damaged, loose or unattached	☐	☐	☐	_____
14	Check that clean agent suppression system releasing control panel is provided and functional	☐	☐	☐	_____
15	Confirm check valves are provided at cylinder connections	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Attach System Acceptance Test Report.	☐	☐	☐	_____
2	System Acceptance Test Report to include continuous flow test for piping and nozzles	☐	☐	☐	_____
3	System Acceptance Test Report to include verification of alarm functions, manual release and abort switches	☐	☐	☐	_____
4	System Acceptance Test Report to include a full operational test.	☐	☐	☐	_____
5	System Acceptance Test Report to include verification of automatic valves	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____

4 _____
5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: QC-FLS_SUP-06.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Classification of fire extinguishers	☐	☐	☐	_____
4	Spacing distance limit of fire extinguishers	☐	☐	☐	_____
5	Location of fire extinguishers	☐	☐	☐	_____
6	Installation details	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
1	Check that location of fire extinguishers per approved drawings	☐	☐	☐	_____
2	Check for correct fire extinguisher type in each location per approved drawings (Dry chemical fire extinguishers are not allowed in AWS data centers)	☐	☐	☐	_____
3	Check that fire extinguishers are not obstructed, easily accessible and recognizable	☐	☐	☐	_____
3	Check that fire extinguisher signs are provided	☐	☐	☐	_____
4	Check that fire extinguishers are properly mounted on wall or inside cabinet as per approved	☐	☐	☐	_____
5	For fire extinguisher within cabinet, check that the cabinet is not obstructed and easily opened	☐	☐	☐	_____
6	Check that fire extinguishers are not showing sign of physical damage, corrosion, leakage and blocked nozzle	☐	☐	☐	_____
7	Check that locking pin is intact and tamper seal is unbroken	☐	☐	☐	_____
8	Check that the operating instructions are clear on the nameplate	☐	☐	☐	_____
9	Check that tag is provided with correct serial number and service date	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____



FIRE EXTINGUISHERS CHECKLIST

QC-FLS_SUP-06

Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: QC-FLS_SUP-07.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Hazard Occupancy Classification	☐	☐	☐	_____
4	Spacing distance limit	☐	☐	☐	_____
5	Design density	☐	☐	☐	_____
6	Location of areas/rooms with water mist system	☐	☐	☐	_____
7	Installation details	☐	☐	☐	_____

B. Items to be Checked

Item	Description	YES	NO	N/A	Comments
1	Check that location of water mist system per approved drawings	☐	☐	☐	_____
2	Check for location of nozzles and orientation are correct per approved drawings	☐	☐	☐	_____
3	Check that fire detectors are provided in areas/rooms with water mist system (smoke detectors, heat detectors etc)	☐	☐	☐	_____
4	Check if system valves are in correct (open or closed) position and are supervised/pad locked/chained	☐	☐	☐	_____
5	Check if valves are accessible and are provided with proper signage	☐	☐	☐	_____
6	Check if electronic solenoid valves are designed to be fail-safe	☐	☐	☐	_____
7	Deluge valve not showing sign of leakage and physical damage	☐	☐	☐	_____
8	Check that control panel is functioning, power supply is provided	☐	☐	☐	_____
9	Check for any lamp damage or defective switch and button in control panel	☐	☐	☐	_____
10	Check that visible and audible alarms are provided in rooms with water mist system	☐	☐	☐	_____
11	Check if equipment and panel are provided with minimum clearance of 1m for access, inspection, service and maintenance purpose	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if folowing tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Performance test, attached test report including flow test and leak test	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____

4

5

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control File No.	Checklist	Version	Latest Update
QC-FLS_ESC-01	FIRE ESCAPE COMPONENTS CHECKLIST	2	22-Feb-23
QC-FLS_ESC-02	EMERGENCY LIGHTING & EXIT SIGNAGE CHECKLIST	2	22-Feb-23
QC-FLS_ESC-03	FIRE RATED CONSTRUCTION CHECKLIST	2	22-Feb-23

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Fire & Life Safety (FLS)
 Location/Grid _____ Document Number: QC-FLS_ESC-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Indication of escape path and exit doors from each room	☐	☐	☐	_____
4	Location of final exit from building	☐	☐	☐	_____
5	Location of exit stairs, and direction of escape path from exit stairs at ground floor	☐	☐	☐	_____
6	Exit doors installation details	☐	☐	☐	_____
7	Fire rating of exit stairs, columns and shafts	☐	☐	☐	_____
8	Location of fire rated walls, fire rated doors and fire shutters	☐	☐	☐	_____
9	Installation details of fire rated walls, fire rated doors, fire rated doors with fire rated glazing and fire shutters	☐	☐	☐	_____
10	Installation details of fire sealant or fire stop for penetrations	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Exit Path					
1	Check that escape path from each room to final exit are not obstructed by any fixed/permanent object	☐	☐	☐	_____
2	Check that exit doors can be opened easily and swung freely without obstruction at any side of the door	☐	☐	☐	_____
3	Check that exit doors that are magnetic locked during normal operation are provided with manual unlock mechanism such as emergency manual release button and panic release hardware	☐	☐	☐	_____
4	Check that exit doors entering and exiting from exit stairs are swinging in escape direction	☐	☐	☐	_____
5	Check that exit doors entering and exiting from circulation corridor are swinging in escape	☐	☐	☐	_____
6	All exit doors are provided with self-closing device	☐	☐	☐	_____
7	Check exit stairs do not contain any combustibles and storage	☐	☐	☐	_____
Exit Stairs					
1	No pipe/wiring penetrating exit stair walls, except system designated for exit stair protection	☐	☐	☐	_____
2	Fire doors opening towards egress direction	☐	☐	☐	_____
3	Fire doors are auto-closing and labelled with fire rating	☐	☐	☐	_____
4	Penetrations by designated fire protection system to be provided with fire sealant	☐	☐	☐	_____
Fire Doors and Fire Shutters					
1	Check location of fire rated doors as per approved drawings	☐	☐	☐	_____
2	Check location of fire shutter as per approved drawings	☐	☐	☐	_____
3	Check that fire rated doors are not obstructed and able to swing freely	☐	☐	☐	_____
4	Check that no obstructions are located under fire shutters	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Fail-safe open test for exit doors	☐	☐	☐	_____
2	Fire shutter to be automatically dropped upon fire emergency	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	

FIRE ESCAPE COMPONENTS CHECKLIST

1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1	
2	
3	
4	
5	

F Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer		Signature		Date (YYYY-MM-DD)	
General Contrator		Signature		Date (YYYY-MM-DD)	
Witnessed By		Signature		Date (YYYY-MM-DD)	

EMERGENCY LIGHTING AND EXIT SIGNAGE CHECKLIST

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ **Site ID:** _____ **Discipline:** Fire & Life Safety (FLS)
Location/Grid _____ **Document Number:** QC-FLS_ESC-02.01
Contractor: _____ **Document Rev. Date (YYYY-MM-DD):** _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/submittals:

Item	Description	YES	NO	N/A	Comments
3	Location of emergency lighting and exit signage	☐	☐	☐	_____
4	Design criteria for emergency lighting and exit signage	☐	☐	☐	_____
5	Installation details for emergency lighting and exit signage	☐	☐	☐	_____
6	Backup power supply/battery provided for emergency lighting and exit sign	☐	☐	☐	_____

B. Installation Checks (Final Completion of Work)

Item	Description	YES	NO	N/A	Comments
Emergency Lighting					
1	Location of emergency lighting as per approved drawings	☐	☐	☐	_____
2	Hanging supports are installed securely	☐	☐	☐	_____
3	Emergency lighting not showing physical damage	☐	☐	☐	_____
4	Emergency lighting not covered by plastics/tape	☐	☐	☐	_____
5	Emergency lighting are accessible for service and maintenance	☐	☐	☐	_____
Exit Signage					
6	Location of exit signage as per approved drawings	☐	☐	☐	_____
7	Confirm that exit signage is visible from any location that is provided with more than one exit	☐	☐	☐	_____
8	Exit signage above exit doors are located at the correct side of egress	☐	☐	☐	_____
9	Exit signage including directional signs are pointing correctly towards exit stairs/final exit	☐	☐	☐	_____
10	Wall mounted exit signs are installed securely and visible	☐	☐	☐	_____
11	Hanging supports for exit sign and directional signs are installed securely	☐	☐	☐	_____
12	Check bottom of all hanging exit signs are installed according to code required height	☐	☐	☐	_____
13	Exit signage not showing sign of physical damage	☐	☐	☐	_____
14	Exit signage not obstructed or covered by plastics/tapes	☐	☐	☐	_____
15	Exit signage are accessible for service and maintenance	☐	☐	☐	_____

C. Functional & Site Acceptance Test

Check if following tests are conducted and test reports are ready:

Item	Description	YES	NO	N/A	Comments
1	Emergency lighting are operational upon power loss/fire emergency mode	☐	☐	☐	_____
2	Exit signs are operational and visible during power loss/fire emergency mode	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Fire & Life Safety (FLS)
 Location/Grid: _____ Document Number: QC-FLS_ESC-03.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

Verify the following items and information are included in the design drawings/shop drawings/sut Verified

Item	Description	YES	NO	N/A	Comments
3	Location of fire rated walls	☐	☐	☐	_____
4	Fire rated separating wall for data halls, electrical rooms and battery storage	☐	☐	☐	_____
5	Installation details of fire rated walls, fire rated doors, fire rated doors with fire rated glazing and fire shutters	☐	☐	☐	_____
6	Installation details of fire rated walls, including fire rating and continuous connections from ceiling slab to floor	☐	☐	☐	_____
7	Installation details of fire sealant or fire stop for penetrations	☐	☐	☐	_____

B. Items to be Checked

Verify the following works to be inspected:

Item	Description	Verified YES	NO	N/A	Comments
Fire-Rated Walls					
1	Check location of fire-rated walls as per approved drawings	☐	☐	☐	_____
2	Fire-rated wall assembly continuity - from floor to ceiling slab	☐	☐	☐	_____
3	Fire-rated wall does not show any physical damage or mold condition	☐	☐	☐	_____
4	Penetration by pipes, cables to be provided with fire sealant. Fire sealant label to be provided on each penetration.	☐	☐	☐	_____
5	Penetration by ducts to be provided with fire damper of similar fire rating	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified YES	NO	N/A	Comments
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____



FIRE RATED CONSTRUCTION CHECKLIST

QC-FLS_SUP-01.01

Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control File No.	Checklist
QC-ICT-01	ICT COMMS CONTAINMENT

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ ICT
 Location/Grid _____ Document Number: _____ QC-ICT-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____ 2022-01-20
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set			
2	Specification			

B. Items to be Checked

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Manufacturer of Basket and accessories.	☐	☐	☐	
2	If not on approved list attach submittal.	☐	☐	☐	
3	Comms baskets Installed as per design	☐	☐	☐	
4	Riser's installed as per design	☐	☐	☐	
5	TVB's Installed as per design	☐	☐	☐	
6	Are there any design exceptions?	☐	☐	☐	
7	Hot/cold aisle crossings contained and with door access	☐	☐	☐	
8	Earth bonding installed and complete	☐	☐	☐	
9	All cut metal ends of threaded rods, unistruts, and baskets galvanized painted	☐	☐	☐	
10	Integral strength of basket has not been modified other than the approved method as stipulated by the manufacturer	☐	☐	☐	
11	End caps installed on threaded rod ends	☐	☐	☐	
12	If used, are square washers aligned with unistrut?	☐	☐	☐	
13	Unistrut support brackets @ 90 degree angles to comms basket on each side	☐	☐	☐	
14	Comms baskets straight/plumbed	☐	☐	☐	
15	Comms brackets straight/plumbed	☐	☐	☐	
16	Tees correctly installed using manufactured bend radius kits?	☐	☐	☐	
17	Bends correctly installed to 90 degrees	☐	☐	☐	
18	Baskets installed at the correct height levels allowing 200mm clearance for cabling access?	☐	☐	☐	
19	Brackets at the correct support distance	☐	☐	☐	
20	Baskets clamped at all junctions? (tee's and bends)	☐	☐	☐	
21	Baskets fixed into position	☐	☐	☐	
22	Are there any exposed sharp edges on basket?	☐	☐	☐	
23	Baskets correctly coupled	☐	☐	☐	

24	Baskets clean of labels/dirt/foreign matter	☐	☐	☐	_____
25	Network row basket drops straight & secure	☐	☐	☐	_____
26	Are there any signs of oxidisation on basket?	☐	☐	☐	_____
27	Are baskets accessible from CAC/HAC?	☐	☐	☐	_____
28	Are there any other cable basket concerns?	☐	☐	☐	_____
29	Are conduits for WAP points bushed to comms basket with a manufactured take off bracket?	☐	☐	☐	_____
30	Are conduit edges free of sharp edges via threaded brass screw cap or plastic protection?	☐	☐	☐	_____
31	Conduits properly secured using correct size/type saddles	☐	☐	☐	_____
32	conduits bonded and grounded correctly	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

1	_____
2	_____
3	_____
4	_____
5	_____

E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contrator	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control File No.	Checklist
QC-M-01	AIR HANDLING UNITS
QC-M-02	EXHAUST FANS
QC-M-03	GC PROCURED EQUIPMENT
QC-M-04	DUCTWORKS & ACCESSORIES
QC-M-05	CONDENSATE DRAINAGE
QC-M-06	REFRIGERATION PIPEWORK

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Mechanical
 Location/Grid _____ Document Number: _____ QC-M-01.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): _____ 2022-08-06
 Document Description: Quality Control

A. Equipment Information

1 Manufacturer _____ Model No. _____ Ref. Dwg # & Date _____
 2 Air Flow Rate # _____ Voltage Rating _____ Feeder Breaker Size Amps _____

B. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

C. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Visual check for physical damages and check against relevant certificates/submittals for equipment.	☐	☐	☐	_____
2	Delivery of DAHU sections as per tender requirement	☐	☐	☐	_____
3	Equipment tagged correctly and nameplate/label details correct to Specification	☐	☐	☐	_____
4	Site Equipment Handling as per as per Supplier recommendation	☐	☐	☐	_____
5	Check Plinths before unit placement	☐	☐	☐	_____
6	Check alignment and anti-vibration Guards	☐	☐	☐	_____
7	Check for excess vibration due to motor and fan misalignment	☐	☐	☐	_____
8	Check filter class and manufacturer per approved submittal.	☐	☐	☐	_____
9	Check internal coil connections and valves as per approved submittals and drawings.	☐	☐	☐	_____
10	Check all power and control cable terminations in the Unit level controller	☐	☐	☐	_____
11	Check connections to external ductwork and Damper connections to DAHU	☐	☐	☐	_____
12	Check AHU drain pan is sloped for free flow of condensate drain and piping at drain completed per design drawings.	☐	☐	☐	_____
13	Check and ensure the AHU interiors are cleaned and free from dust and clean.	☐	☐	☐	_____
14	Visual check of outer casing between panels.	☐	☐	☐	_____
15	Check for smooth operation for opening and closing of all dampers	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____
 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____



AIR HANDLING UNITS

QC-M-01.01

Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Mechanical
Location/Grid _____ Document Number: QC-HVAC-03.01
Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
Document Description: Quality Control

A. Equipment Information

1 Manufacturer _____ Model No. _____ Ref. Dwg # & Date _____
2 Capacity # _____ Voltage Rating _____ Feeder Breaker Size Amps _____

B. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

C. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Visual check for physical damages and check against relevant certificates/submittals for equipment.	☐	☐	☐	_____
2	Delivery of Exhaust Fan sections per tender requirements	☐	☐	☐	_____
3	Equipment tagged correctly and nameplate/label details correct to Specification	☐	☐	☐	_____
4	Site Equipment Handling used per Supplier recommendation	☐	☐	☐	_____
5	Check structural platform before unit placement	☐	☐	☐	_____
6	Check alignment and anti-vibration Guards	☐	☐	☐	_____
7	Check for excess vibration due to motor and fan misalignment	☐	☐	☐	_____
8	Check inlet / outlet duct connections	☐	☐	☐	_____
9	Check between panels for water ingress	☐	☐	☐	_____
10	Check all power and control cable terminations in the Unit level controller	☐	☐	☐	_____
11	Check water proofing connection between fan suction and roof detail post installation.	☐	☐	☐	_____
12	Check external ductwork / Damper connection to Exhaust Fans	☐	☐	☐	_____
13	Check Fan interiors are clean and free from dust	☐	☐	☐	_____
14	Check for smooth operation for opening and closing of all dampers	☐	☐	☐	_____
15	Check all nuts, bolts, seismic supports, vibration pads are tightened properly	☐	☐	☐	_____
16	Visual check of outer casing between panels.	☐	☐	☐	_____
17	3rd party curb and fan attachment inspections complete per the structural design requirements	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
2 _____
3 _____
4 _____
5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____



EXHAUST FANS

QC-HVAC-03.01

General Contrator _____
Witnessed By _____

Signature _____
Signature _____

Date (YYYY-MM-DD) _____
Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Mechanical
 Location/Grid _____ Document Number: QC-HVAC-04.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

A. Equipment Information

1 Manufacturer _____ Model No. _____ Ref. Dwg # & Date _____
 2 Capacity # _____ Voltage Rating _____ Feeder Breaker Size Amps _____

B. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

C. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Visual check for physical damages and check against relevant certificates/submittals for equipment.	☐	☐	☐	_____
2	Check equipment labels clearly mention Capacities, Motor KW, Date of manufacturing etc. as per technical submittal and specifications	☐	☐	☐	_____
3	Check site readiness for equipment installation	☐	☐	☐	_____
4	Check if the installation allows for easy maintenance	☐	☐	☐	_____
5	Check installation allows proper access equipment components, such as opening of control panel doors without any obstruction, easy removal of filters from FCUs, etc.	☐	☐	☐	_____
6	Check accessibility of to trap doors, filters, electrical control panel etc. post installation	☐	☐	☐	_____
7	Equipment tagged correctly and nameplate/label details correct to Specification	☐	☐	☐	_____
8	Site Equipment Handling used per Supplier recommendation	☐	☐	☐	_____
9	Check structural platform before unit placement	☐	☐	☐	_____
10	Check alignment and anti-vibration Guards	☐	☐	☐	_____
11	Check for excess vibration due to motor and fan misalignment	☐	☐	☐	_____
12	Check inlet / outlet duct connections	☐	☐	☐	_____
13	Check between the panels for water ingress	☐	☐	☐	_____
14	Check all power and control cable terminations in the Unit level controller	☐	☐	☐	_____
15	Check water proofing for connection between fan suction and roof detail post installation.	☐	☐	☐	_____
16	Check external ductwork / Damper connection to Exhaust Fans	☐	☐	☐	_____
17	Check Fan interiors are clean and free from dust.	☐	☐	☐	_____
18	Check for smooth operation for opening and closing of all dampers	☐	☐	☐	_____
19	Check all nuts, bolts, seismic supports, vibration pads are tightened properly	☐	☐	☐	_____
20	Visual check of outer casing between panels.	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____
 4 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ HVAC
 Location/Grid: _____ Document Number: QC-HVAC-05.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Inspected (Duct Installation)

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Visual check for physical damages and check against relevant certificates/submittals for equipment.	☐	☐	☐	_____
2	Check duct dimensions - Internal clear dimensions shall be as per the approved drawings (after deducting internal acoustic lining if any)	☐	☐	☐	_____
3	Check the fittings, shape, size and connections to be as per specifications and approved shop drawings.	☐	☐	☐	_____
4	Check joints and flanges are correctly fabricated, jointed and sealed (All transverse joints and longitudinal seams).	☐	☐	☐	_____
5	Check duct joints are sealed externally before insulation with approved sealant.	☐	☐	☐	_____
6	Check fixing of supports and spacing as per approved drawings & submittal	☐	☐	☐	_____
7	Seismic restraints correctly installed.	☐	☐	☐	_____
8	Check inserts are correctly placed in slab/ soffit for duct supports.	☐	☐	☐	_____
9	Check sleeves are installed for ducts passing through walls/ partitions as required / as per approved drawings (applicable only for fire rated walls)	☐	☐	☐	_____
10	Check and ensure that reinforcement is provided on ducts as required. Check if guide vanes are provided wherever there is turn in direction.	☐	☐	☐	_____
11	Check acoustic lining is properly fastened and undamaged (where applicable)	☐	☐	☐	_____
12	Flexible connectors are installed at equipment connections as per requirements / approved drawings.	☐	☐	☐	_____
13	All the access doors, fire dampers, VCDs, NRD's & MVCD's, etc. are installed as per approved drawings specifications and manufacturer's instructions as applicable.	☐	☐	☐	_____
14	Check flexible ducts and flexible connectors are installed at required places as per approved drawings.	☐	☐	☐	_____
15	Duct work is protected from damage during the construction period.	☐	☐	☐	_____
16	Witness Duct Leakage / Smoke test to identify leakages. This should be done before insulation works.	☐	☐	☐	_____
17	Check air terminals and duct accessories match approved submittals and specifications.	☐	☐	☐	_____
18	Check installation of air terminal, accessories, dampers per approved shop drawings.	☐	☐	☐	_____
19	Inspect duct for proper cleaning prior to start insulation work.	☐	☐	☐	_____
20	Materials used like Insulation & glue are as per approved technical submittal.	☐	☐	☐	_____
21	Check the insulation thickness used in different areas and density of the rubber insulation meets specifications.	☐	☐	☐	_____
22	Is the insulation free from sagging?	☐	☐	☐	_____
23	Check for damage to the insulation	☐	☐	☐	_____
24	Check and ensure that the insulation is installed in a correct manner with good workmanship	☐	☐	☐	_____

C. Items to be Inspected (Duct Fire Rating)

Verify the following works to be inspected:

Verified

Item	Description	YES	NO	N/A	Comments
1	Does the ductwork fire rating material comply with the specification?	☐	☐	☐	
2	Does the ductwork fire rating thickness comply with local fire code	☐	☐	☐	
3	Is the fire rating free from sagging?	☐	☐	☐	
4	Is the fire rating free from damage?	☐	☐	☐	

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

- 1
- 2
- 3
- 4
- 5

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Mechanical
 Location/Grid: _____ Document Number: QC-M-06.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Has the safety/water tray been installed with correct fall?	☐	☐	☐	_____
2	Is drainage pipe installed per design drawings?	☐	☐	☐	_____
3	Does the drainage pipework material comply with the specification?	☐	☐	☐	_____
4	Have all traps been installed per the design drawings?	☐	☐	☐	_____
5	Has the safety/water tray been connected to the main line?	☐	☐	☐	_____
6	Does drainage have sufficient fall?	☐	☐	☐	_____
7	Is condensate drainage line sufficiently supported?	☐	☐	☐	_____
8	Has clear tubing been installed at unit and safety/water tray connection?	☐	☐	☐	_____
9	Is drainage line terminated with correct air gap?	☐	☐	☐	_____
10	Has all drainage pipework been inspected for damage?	☐	☐	☐	_____
11	Have all alterations to pipe work been recorded on the as-built drawings?	☐	☐	☐	_____
12	Has safety/water tray been bucket tested ensuring all water is free to discharge?	☐	☐	☐	_____

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

D. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer _____ Signature _____ Date (YYYY-MM-DD) _____
 General Contractor _____ Signature _____ Date (YYYY-MM-DD) _____
 Witnessed By _____ Signature _____ Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Mechanical
 Location/Grid: _____ Document Number: QC-M-07.01
 Contractor: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____

B. Items to be Inspected (Pipework)

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Does the pipework material comply with the specifications?	☐	☐	☐	_____
2	Has the pipework support system been approved by the client?	☐	☐	☐	_____
3	Seismic Restraints installed?	☐	☐	☐	_____
4	Does the pipework size reflect the latest workshop drawings/Schematic?	☐	☐	☐	_____
5	Does the pipework layout reflect the latest workshop drawings/Schematic?	☐	☐	☐	_____
6	Have all oil traps been installed in the required locations?	☐	☐	☐	_____
7	Has Nitrogen been used to purge the lines during pipework installation?	☐	☐	☐	_____
8	Pipework is Clean and free of debris?	☐	☐	☐	_____
9	Pipework has been pressure tested to specified values?	☐	☐	☐	_____
10	Pipework has been Strength Pressure tested?	☐	☐	☐	_____
11	Have all pipe runs been labelled at plant where required? i.e. Branch Boxes should be labelled where required	☐	☐	☐	_____
12	Has the pipework length been measured for additional gas charge?	☐	☐	☐	_____
13	Have all fittings been properly checked for loose bolts or fixtures?	☐	☐	☐	_____
14	Has pipework been inspected for damage?	☐	☐	☐	_____
15	Has pipework schematic with install lengths been sent to the supplier/manufacturer for approval?	☐	☐	☐	_____
16	Has pipework schematic been approved by supplier/manufacturer via writing?	☐	☐	☐	_____
17	Have all defects been rectified?	☐	☐	☐	_____
18	Has the pipework been tested in accordance with the specification and signed off by the client?	☐	☐	☐	_____
19	Have Certificates been provided and submitted to the client?	☐	☐	☐	_____
20	Have all alterations to pipe work been reflected on the As-built workshop drawings / schematics?	☐	☐	☐	_____
21	Refrigeration sensors / alarms / detection have been installed and are compliant to code requirements.	☐	☐	☐	_____

C. Items to be Inspected (Insulation)

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Does the insulation material comply with the specification?	☐	☐	☐	_____
2	Has the insulation sample been approved by the client?	☐	☐	☐	_____
3	Has the pipework pressure test been successfully completed and signed off by the client?	☐	☐	☐	_____
4	Has the correct insulation thickness been installed?	☐	☐	☐	_____
5	Has the insulation been installed with a full vapor seal with the approved sealant?	☐	☐	☐	_____
6	Has the insulation been installed free of damage?	☐	☐	☐	_____
7	Has all insulation that is externally exposed been protected from weather conditions?	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____

2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____
5	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1	_____
2	_____
3	_____
4	_____
5	_____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By	_____	Signature	_____	Date (YYYY-MM-DD)	_____

MV ROOM READINESS INSPECTIONS

QC-LLE-001

Quality Control File No.	Checklist
QC-LLE-001	MV ROOM READINESS CHECKLIST
CHECKLIST INSTRUMENTS	Summary of instruments required for the inspection of the rooms

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section E), or attach supplemental documentation.

REGION		Site ID: _____	Discipline: _____	Multiple
		Location/Grid: _____	Document Number: _____	QC-LLE-001
		Contractor: _____	Document Rev. Date (YYYY-MM-DD): _____	
	Document Description: Quality Control			

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set			
2	Specification			

B. External Conditions

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Check that an external access route to the MV room entrance doors from the site roadway is provided for equipment delivery.	☐	☐	☐	
2	Confirm surface water drainage has been installed as per the construction documents and the ground slopes away from the MV room so there is no risk of ponding water close to the MV room.	☐	☐	☐	

C. Doors & External Envelope

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Preferably the external envelope to be complete (construction schedule permitting). MV room to be wind and weathertight as a minimum and not allowing the entry of pests.	☐	☐	☐	
2	Ideally door installation to be complete as per the construction documents (construction schedule permitting). If temporary doors are required, these shall keep the room wind and weathertight. Check that the doors open through 180° (unless otherwise agreed).	☐	☐	☐	
3	Preference for ironmongery to be installed as per the construction documents (construction schedule permitting). Contractor to provide keyed access to the room as a minimum.	☐	☐	☐	

D. Internal Conditions

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Confirm area cleaned and that refuse and excess materials have been removed.	☐	☐	☐	
2	Confirm room layout and dimensions are in accordance with the construction documents.	☐	☐	☐	
3	Ensure that the floor is neatly finished with a smooth level surface. Room floor slab to be installed as per the construction documents.	☐	☐	☐	
4	Confirm that the MV room floor is above the finished ground level as per the construction drawings.	☐	☐	☐	
5	Preference for duct popups to be sealed per the construction documents requirements (construction schedule permitting). This may require temporary sealing to ensure the room remains weathertight/vermin proof.	☐	☐	☐	
6	The Contractor shall ensure that the environmental conditions within the room comply with the vendors requirements for delivery and storage of all the equipment to be located in the MV room. This may require the use of temporary climate control systems. Typical environmental conditions: 60°F / 15.6°C min, 85°F / 30°C max temperature / 90% Relative Humidity.	☐	☐	☐	

E. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	

5 _____ ☐ ☐ ☐ _____

F. COMMENTS AND REMARKS:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

G. Document Sign-Off

The General Contractor certifies the installation is complete, in accordance with project requirements; space is ready for receiving the OFCI (Owner Furnished Contractor Install) equipment.

Installer _____	Signature _____	Date (YYYY-MM-DD) _____
General Contractor _____	Signature _____	Date (YYYY-MM-DD) _____
Witnessed By _____	Signature _____	Date (YYYY-MM-DD) _____

PARAMETER TO MEASURE/RECORD	INSTRUMENT	NOTES
Temperature & Humidity	Thermo-hygrometer 	
Dimensions/Distances	Laser measure 	
Floor level	Laser level 	
Visual Records	Digital Camera 	

PV INSTALLATION INSPECTIONS

Quality Control File No.	Checklist
QC-PV-01	PV PANELS AND SUPPORT STRUCTURE
QC-PV-02	PV INVERTERS AND CONTROLS
QC-PV-03	CABLING
QC-PV-04	PV CABLE TRAY/BASKET CONTAINMENT
QC-PV-05	PVC / STEEL CONDUIT

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: _____ Electrical
 Equipment Tag: _____ Document Number: QC-PV-01
 PV Specialist: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
 Document Description: Quality Control

i. Equipment Information

Manufacturer: _____ Manuf / Serial#: _____ Ref. Dwg # & Date: _____
 Current Rating: _____ Avg. Panel Efficiency: _____ Short Circuit Rating (Isc): _____
 Type of Solar Cells: _____ Voltage Rating [V]: _____ Peak Power of array [kWp]: _____
 Product Certifications: _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____
3	Manufacturers approved technical data sheet	_____	_____	_____

B. Project Requirements

Verify the following installation quality checks:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	PV panel systems manufactured and installed by an approved vendor as per the specification.	☐	☐	☐	_____

C. Items to be Checked

Verify the following installation quality checks with the equipment de-energized (Power OFF);

Item	Description	Verified			Comments
		YES	NO	N/A	
1	PV panels, framing system and roof fixing/ballast or ground support system are as per the approved specifications, OEM installation instructions and approved shop drawings.	☐	☐	☐	
2	Ensure that no PV module is damaged (broken glass, frame, twisted, scratches).	☐	☐	☐	
3	Check with an electronic level the verticality and horizontality of support structure and modules. Check that the orientation and tilt angle of the PV modules are as per the design	☐	☐	☐	
4	Freestanding Ground supported systems (where applicable): Check the bolting is complete and that the foundations are as per the approved design, OEM installation instructions and	☐	☐	☐	
5	All waste materials removed prior to the installation being offered for inspection.	☐	☐	☐	
6	Windblown litter prevented from accumulate beneath the PV panels prior to energization.	☐	☐	☐	
7	Confirm that the O&M information includes the installation servicing requirements in accordance with the manufacturer's instructions.	☐	☐	☐	
8	Confirm layouts of panels are as per approved shop drawings.	☐	☐	☐	
9	Confirm layouts of panels allow adequate access for maintenance/replacement of any existing plant and equipment (in case of a retrofit installation).	☐	☐	☐	
10	Confirm that the PV panels installation is coordinated with the lightning protection system in the roof.	☐	☐	☐	
11	All extraneous metal components to be adequately bonded and earthed.	☐	☐	☐	
12	PV modules installation to not obstruct rainwater flowing and roof drains.	☐	☐	☐	
13	PV panels located in seismic areas to prevent lateral movement via anchorage or framing.	☐	☐	☐	
14	Any contact between different metals (if applicable) must be fully electrically isolated to prevent electrolytic corrosion.	☐	☐	☐	
15	PV panels have been cleaned prior to handover.	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____

E. COMMENTS AND REMARKS:

1 _____
 2 _____
 3 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Item	Description	YES	NO	N/A	Comments
Installer Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
QA Manager Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (1)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (2)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (3)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Electrical
Equipment Tag: _____ Document Number: QC-PV-02
PV Specialist: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
Document Description: Quality Control

i. Equipment Information

Manufacturer: _____ Manuf / Serial#: _____ Ref. Dwg # & Date: _____
Generation Power [kW]: _____ AC Connection type: _____ Short Circuit Rating (Isc): _____
Product Certifications: _____ Input Voltage [V]: _____ Output Current [A]: _____
THD[%]: _____ Protection [IP]: _____ Temperature range: _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____
3	Manufacturers approved technical data sheet	_____	_____	_____

B. Project Requirements

Verify the following installation quality checks:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Inverters manufactured and installed by an approved vendor as per the specification.	☐	☐	☐	_____
3	Inverters to have integral Ground Fault monitoring and protection for each individual DC circuit (alternatively, stand alone devices shall such features).	☐	☐	☐	_____
4	Export Power Manager (where applicable) system to be certified for use in accordance with the Technical Guidance for Customer Export Limiting Schemes (G100) or local utility	☐	☐	☐	_____
5	Inverters to be fully type tested for compliance with G99 Type A requirements.	☐	☐	☐	_____

C. Items to be Checked

Verify the following installation quality checks with the equipment de-energized (Power OFF);

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Inverters, Export Power Manager (where applicable) and associated cabling and switchgear are as per the approved specifications, OEM installation instructions and approved shop	☐	☐	☐	_____
2	All waste materials removed prior to the installation being offered for inspection.	☐	☐	☐	
3	Check that obstructions and stored materials do not reduce the level of ventilation for inverter.	☐	☐	☐	
4	Confirm adequate access to the inverter(s), including protective walk pads if applicable.	☐	☐	☐	
5	Load break switch adequate for isolating DC voltages is installed as part of the inverter assembly /stand alone. No AC isolators to be used in DC circuits.	☐	☐	☐	
6	Double pole isolator switch installed to achieve isolation of the inverter from the AC supply.	☐	☐	☐	
7	Check that adequate labelling is installed to denote that components may be still live after disconnection.	☐	☐	☐	
8	Inverters to be fitted with a fire-resistant non combustible barrier between inverters and roof membrane and parapet where applicable (minimum extending 20cm around the inverters	☐	☐	☐	
9	Check that inverters are monitored by the EPMS, via volt free contacts to indicate a common alarm.	☐	☐	☐	
10	Confirm metering is connected to EPMS as per the design drawings and specifications.	☐	☐	☐	
11	Confirm installation of surge protection devices and overcurrent protection as per the design requirements.	☐	☐	☐	_____
12	Verify that roof mounted inverters are installed within structurally engineered shaded canopies. To be installed more than 2m away from roof edge (except if installed onto a	☐	☐	☐	
13	Verify that ground mounted inverters are installed as per design, housed in an electrical cabinet and protected by crash barrier where required in the specification.	☐	☐	☐	
14	Confirm that the PV system has been interfaced with the Fire Alarm and operates as per the Cause & Effect document when the fire detection system goes into alarm.	☐	☐	☐	
15	Verify the operation of the remote isolation switch from the PV array.	☐	☐	☐	

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____

Item	Description	YES	NO	N/A	Comments
E. COMMENTS AND REMARKS:					
1					
2					
3					

F. Document Sign-Off					
The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.					
Installer Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
General Contractor	_____	Signature	_____	Date (YYYY-MM-DD)	_____
QA Manager Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (1)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (2)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Witnessed By (3)	_____	Signature	_____	Date (YYYY-MM-DD)	_____
Name	_____	Signature	_____	Date (YYYY-MM-DD)	_____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section D), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Electrical
Equipment Tag: _____ Document Number: QC-PV-03
PV Specialist: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
Document Description: Quality Control

i. Equipment Information

Manufacturer: _____ Manuf / Serial#: _____ Ref. Dwg # & Date: _____
Current Rating: _____ KAIC Rating: _____ Withstand Rating KA: _____
Type/Style: _____ Voltage Rating [kV]: _____ BIL Rating [kV]: _____

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set	_____	_____	_____
2	Specification	_____	_____	_____
3	Manufacturers approved technical data sheet	_____	_____	_____

B. Project Requirements

Verify the following installation quality checks:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	DC String wiring shall be identified harmonized (H1Z2Z2-K) European Standard solar cable for interconnection within photovoltaic systems, suitable for external installations, in conduits or tray system. Conductor shall be copper conductor with a maximum conductor temperature of 120° and maximum voltage of 1.8kV. CPR fire performance Cca.	☐	☐	☐	_____
2	Cabling to be UV sunlight resistant, halogen free, flame retardant and self-extinguishing.	☐	☐	☐	_____

C. Items to be Checked

Verify the following installation quality checks with the equipment de-energized (Power OFF);

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Any switchgear/panel is inspected for damage and any damage found recorded in Procore Observations prior to removing cable chamber doors and/or covers	☐	☐	☐	_____
2	Cable chambers are sealed off to prevent dust, swarf, tools and/or cable cuts from falling into lower chambers and/or exposed terminals and/or bus bars.	☐	☐	☐	_____
3	Cable chamber doors and/or covers and flash guards have been removed and stored safely in designated containers/storage boxes.	☐	☐	☐	_____
4	Non-ferrous gland plate fitted in and is sealed meeting IP rating of switchboard/panels.	☐	☐	☐	_____
5	Correct type of cable glands has been installed as per client specifications and manufacturer instructions using approved tooling only.	☐	☐	☐	_____
6	Nylon sealing washers and cable gland shrouds have been fitted to all cables and tightened/sealed meeting IP rating of switchboard/panels.	☐	☐	☐	_____
7	Cables have been inspected for visible damage to insulation	☐	☐	☐	_____
8	Cables have been point-to-point continuity tested and identified using approved cable markers (Cable Tags). Labels to indicate polarity or phase. Cables to have integral coloring to indicate grounded conductors, equipment grounding conductors and AC phase conductors.	☐	☐	☐	_____
9	Minimum bending radius has not been exceeded when forming and dressing cables from source to destination.	☐	☐	☐	_____
10	Core lugs/ferrules have been correctly crimped using an approved HEX crimping tool and are not under or over crimped.	☐	☐	☒	_____
11	Cable connectors for the string cabling to be of same quality as the factory fitted PV module connectors. Confirm that connectors are protected from direct sunlight.	☐	☐	☐	_____
12	All heat shrink insulation sleeves (where applicable) are cut neatly to size and correctly installed not covering the copper surface area between lug and bar.	☐	☐	☐	_____
13	All labels have been applied to the cables minimum 100mm distance from cable gland shroud. Reading left to right/bottom to top.	☐	☐	☐	_____
14	Electrical panels have been vacuumed and cleaned.	☐	☐	☐	_____
15	Combiner boxes to have a length that avoids big coils and tight cable entries. Conductors not to rest/contact the roof membrane.	☐	☐	☐	_____
16	DC cabling to be installed on dedicated containment, segregated from the AC cabling throughout the installation.	☐	☐	☐	_____

D. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	_____	☐	☐	☐	_____
2	_____	☐	☐	☐	_____
3	_____	☐	☐	☐	_____
4	_____	☐	☐	☐	_____

Item	Description	YES	NO	N/A	Comments
5		☐	☐	☐	

E. COMMENTS AND REMARKS:

1 _____

2 _____

3 _____

4 _____

5 _____

F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer Name _____	Signature _____	Date (YYYY-MM-DD) _____
General Contractor _____	Signature _____	Date (YYYY-MM-DD) _____
QA Manager Name _____	Signature _____	Date (YYYY-MM-DD) _____
Witnessed By (1) _____	Signature _____	Date (YYYY-MM-DD) _____
Name _____	Signature _____	Date (YYYY-MM-DD) _____
Witnessed By (2) _____	Signature _____	Date (YYYY-MM-DD) _____
Name _____	Signature _____	Date (YYYY-MM-DD) _____
Witnessed By (3) _____	Signature _____	Date (YYYY-MM-DD) _____
Name _____	Signature _____	Date (YYYY-MM-DD) _____

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Electrical
Location/Grid: _____ Document Number: QC-PV-04
PV Specialist: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set			
2	Specification			

B. Items to be Checked

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	Cable tray/ladder/basket and accessories material is as per the approved specifications	☐	☐	☐	
2	Cable containment supports are installed as per approved shop drawings and OEM installation instructions	☐	☐	☐	
3	Cable containment is installed in the correct location as per site drawings/plans/site coordination carried out by contractor.	☐	☐	☐	
4	Cable containment is installed as per site drawings/plans with adequate spacing and clearances to provide access to other services	☐	☐	☐	
5	Cable containment supports are secured using approved seismic restraint (where required) as per design by contractor	☐	☐	☐	
6	Cable containment supports and cable tray/ladder/baskets are installed level with equal spacing between supports	☐	☐	☐	
7	Cable containment is marked/tagged regularly at a minimum of 3m spaces to indicate its use	☐	☐	☐	
8	Cable containment has no sharp edges	☐	☐	☐	
9	Cut containment supports and cable tray/ladder/baskets have been painted to stop exposed metal rusting.	☐	☐	☐	
10	Adequate insulation considered for cable containment where passing near hot surfaces	☐	☐	☐	
11	Cable tray/ladder/basket installation shall ensure earth continuity by connection across each joint. Installation cannot rely on the metallic joint connectors.	☐	☐	☐	
12	Earth continuity is maintained by using earth cable across cable tray/ladder/basket joint.	☐	☐	☐	
13	Cable tray/ladder/basket is adequate for the cables installed with 30% spare space for future cables	☐	☐	☐	
14	All external cables trays have mechanical and rodent protection via covers	☐	☐	☐	
15	Adequate space as per design shall be kept between various types of cable containment (MV/LV/Controls etc.)	☐	☐	☐	
16	Fire barriers provided as per design wherever trunking/conduits passing through floor or fire rated walls	☐	☐	☐	
17	LV Mains Cables are supported in cable tray/ladder using certified fault rated cable cleats. Cable cleats are installed at distances as required by type test design for the required peak fault current as per the approved fault study	☐	☐	☐	
18	Cable zip ties to be non-metallic, sunlight, UV and weather resistant.	☐	☐	☐	

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	
4		☐	☐	☐	
5		☐	☐	☐	

D. COMMENTS AND REMARKS:

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E. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

**PV CABLE TRAY/
BASKET CONTAINMENT**

Installer Name	Signature	Date (YYYY-MM-DD)
General Contractor	Signature	Date (YYYY-MM-DD)
QA Manager Name	Signature	Date (YYYY-MM-DD)
Witnessed By (1)	Signature	Date (YYYY-MM-DD)
Name	Signature	Date (YYYY-MM-DD)
Witnessed By (2)	Signature	Date (YYYY-MM-DD)
Name	Signature	Date (YYYY-MM-DD)
Witnessed By (3)	Signature	Date (YYYY-MM-DD)
Name	Signature	Date (YYYY-MM-DD)

Quality Control

Checklist

Note: The contracted Installer is responsible to list the additional checks and verifications deemed necessary in the last section of this document (Section C), or attach supplemental documentation.

REGION _____ Site ID: _____ Discipline: Electrical
Location/Grid: _____ Document Number: QC-PV-05
PV Specialist: _____ Document Rev. Date (YYYY-MM-DD): 2022-08-06
Document Description: Quality Control

A. Associated Documentation

The following documentation has been referenced when completing the inspection:

Item	Description	Document ID	Revision Date	Comments
1	Drawing Set			
2	Specification			

B. Items to be Inspected

Verify the following works to be inspected:

Item	Description	Verified			Comments
		YES	NO	N/A	
1	PVC / Steel conduit and accessories material is as per the approved specifications	☐	☐	☐	
2	PVC / Steel conduit supports are installed as per approved shop drawings and OEM installation instructions	☐	☐	☐	
3	PVC / Steel Conduits are installed level with equal spacing between supports	☐	☐	☐	
4	BMS PVC / Steel conduit is marked/tagged with yellow indicators regularly at a minimum of 3m spaces to indicate it use outlined in Control Specification 251100-4 clause 2.2 D.1	☐	☐	☐	
5	EPMS PVC / Steel conduit is marked/tagged with yellow indicators regularly at a minimum of 3m spaces to indicate it use outlined in Control Specification 251100-4 clause 2.2 D.2	☐	☐	☐	
6	Cut steel Conduits have been painted to stop exposed metal rusting.	☐	☐	☐	
7	Adequate insulation considered for cable containment where passing near hot surfaces	☐	☐	☐	
8	Fire barriers provided as per design wherever conduits pass through floor or fire rated walls	☐	☐	☐	
9	Where a conduit terminates at an array, the conduit to be securely fastened to the racking system.	☐	☐	☐	
10	Where conductors in free air enter conduits, a listed cord grip shall be present to prevent the intrusion of moisture. Conduits to be sealed for insects and small animals.	☐	☐	☐	
11	Check provision of conduit expansion fittings, as per manufacturer requirements (minimum 30m spacing).	☐	☐	☐	

C. Additional Checks and Verifications

☐ Check if supplemental documentation is attached

Checks and Verifications deemed necessary by the responsible party:

Item	Description	Verified			Comments
		YES	NO	N/A	
1		☐	☐	☐	
2		☐	☐	☐	
3		☐	☐	☐	

D. COMMENTS AND REMARKS:

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F. Document Sign-Off

The Installation Vendor certifies the installation is complete, in accordance with project requirements; equipment is ready for service.

Installer Name	Signature	Date (YYYY-MM-DD)
General Contractor	Signature	Date (YYYY-MM-DD)
QA Manager Name	Signature	Date (YYYY-MM-DD)
Witnessed By (1) Name	Signature	Date (YYYY-MM-DD)
Witnessed By (2) Name	Signature	Date (YYYY-MM-DD)
Witnessed By (3) Name	Signature	Date (YYYY-MM-DD)

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