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**METHOD STATEMENT FOR INSTALLATION
TESTING AND COMMISSIONING OF**

SMOKE MANAGEMENT SYSTEM

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REVISION RECORD

This cover page is a record of all revisions of the document identified above by number and title. All previous cover pages are hereby superseded and are to be destroyed.

| Rev. No. | Date | By | Chkd. | Approvals | Description and Page Numbers of Revisions |
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1.0 PURPOSE

- This method statement is applicable for the sequence & Methodology that will be used for the Installation, testing and commissioning of Smoke Management System as mentioned in the Specifications & Approved Shop Drawings.

2.0 SCOPE

- This method Statement shall cover the Smoke Management System in line with project requirements as indicated in the specifications & manufacturer's instructions.

3.0 REFERENCE

- 3.1 Specifications
- 3.2 Project Quality Plan
- 3.3 Project HSE Plan
- 3.4 Material Approval Request

4.0 DEFINITIONS

- 4.1 Main Contractor :
- 4.2 MEP Contractor :
- 4.3 PQP : Project Quality Plan
- 4.4 PSP : Project Safety Plan
- 4.5 QCP : Quality Control Procedure
- 4.6 HSE : Health, Safety and Environment
- 4.7 MS : Method Statement
- 4.8 ITP : Inspection Test Plan
- 4.9 QA/QC : Quality Assurance / Quality Control Engineer.
- 4.10 WIR : Inspection and Test Request
- 4.11 MIR : Material Verification Request
- 4.12 MAR : Material Approval Request
- 4.13 SMACNA : Sheet Metal and Air-conditioning Contractor's National Association
- 4.14 ARI : Air-conditioning & Refrigeration Institute
- 4.15 NEMA : National Electrical Manufacturers Association
- 4.16 UL : Underwriters Laboratories
- 4.17 AMCA : Air Movement & Control Association
- 4.18 BS : British Standards

5.0 RESPONSIBILITIES:

- Responsibilities for ensuring that the steps in this procedure shall be carried out are specified at relevant steps in the procedure:
- Project Manager

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- Construction manager
- QA/QC Engineer
- Site Engineer
- HSE officer
- Store Keeper

5.1 Project Manager

- The work progress shall be carried out as per planned program and all the equipment's required to execute the works shall be available and in good condition as per project planned.
- Specific attention is paid to all safety measures and quality control in coordination with Safety Engineer and QA/QC Engineer and in line with PSP and PQP.

5.2 Construction Manager

- Construction Manager is responsible to supervise and control the work on site.
- Coordinating with QA/QC Engineers, Site Team & Foremen for all activities on site.
- Control and sign all WIRs before issuing to Consultant approval.

5.3 Site Engineer

- The method of statement to the system shall be implemented according to the Consultant project specifications and approved shop drawings.
- Provision of all necessary information and distribution of responsibilities to his Construction team.
- The work progress shall be monitored in accordance with the planned work program and he will provide reports to his superiors.
- The constant coordination with the Safety Engineer to ensure that the works are carried out in safe working atmosphere.
- The constant coordination with the QA/QC Engineer for any works to be carried out and initiate for the Inspection for the finished works.
- He will ensure the implementation of any request that might be raised by the Consultant.
- Efficient daily progress shall be obtained for all the equipment and manpower.
- He will engage in the work and check the same against the daily report received from the Foremen.
- The passage of all the revised information to the Foremen and ensure that it's being carried out properly.

5.4 QA/QC Engineer (MEP):

- The monitoring of executions of works at site and should be as per the approved shop drawings and project specifications.
- Ensure WIRs and MIRs are being raised for activities in timely manner and inspected by the

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Consultant.

- He will follow and carries out all the relevant tests as per project specifications.
- Obtain the required clearance prior to Consultant's inspections.
- Should acquire any necessary civil works clearances and coordination.
- QA/QC Engineer will assist the Consultant Engineer/ Inspector during Inspection.
- Check & ensure work is completed prior to offer consultant for inspection.
- Coordination with site construction team.
- He will assist the Consultant Engineer/ Inspector during the inspection. (Both Contractor & Sub-contractor QA/QC MEP)
- Ensure all works have been completed prior to raise inspection to the consultant.

5.5 Site Foreman

- The carrying-out of work and the proper distribution of all the available resources in coordination with the Site Engineer on a daily basis.
- Daily reports of the works are achieved and coordinated for the future planning with the Site Engineer.
- Incorporate all the QA/QC and Safety requirements as requested by the concerned Engineer.
- Meeting with any type of unforeseen incident or requirement and reporting the same to the Site Engineer immediately.

5.6 Safety Officer

- The implementation of all safety measures in accordance with the HSE plan and that the whole work force is aware of its proper implementation.
 - The implementation of safety measures is adequate to maintain a safe working environment on the work activity.
 - Inspection of all the site activities and training personnel in accident prevention and its proper reporting to the Construction Manager and the Project Manager.
 - The site is maintained in a clean and tidy manner.
 - Ensure only trained persons shall operate the power tools.
 - Ensure all concerned personals shall use PPE and all other items as required.
 - Ensure adequate lighting is provided in the working area at night time.
 - Ensure high risk elevated areas are provided are barricade, tape, safety nets and provided with ladders.
-
- Ensure service area/inspection area openings are provided with barricade, tape, and safety nets.
 - Ensure safe access to site work at all times.

5.7 Store Keeper (SK)

- Responsible for overall Store operations in making sure to store the material delivery to the site and keep it in suitable area that will keep the material in safe from rusty and damage.

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- One who will acknowledge the receiving of materials at site in coordination with QA/QC
- Ensure Materials is approved as per approved MAR in Good Condition.

6.0 EQUIPMENT & MATERIALS

Following tools shall be arranged before starting the job.

- Marker
- Screw Drivers
- Pliers
- Multi-meter
- Lamp – for testing

7.0 PROCEDURE

7.1 INSTALLATION OF FIRE FIGHTER SMOKE CONTROL STATION (FSCS) PANEL AND HAND OFF AUTO (HOA) MODULES

- For panel installations, check the location as per approved shop drawings.
- Verify base frame dimensions, orientation and locations are correct.
- For wall mounted (concealed, surface mounted) check the height and level as per approved shop drawings.
- Check provisions for earthing and interface connections.
- Check space/access are available for maintenance and future repair. Refer approved shop drawings.
- After installing FSCS Panel, HOA Modules will be mounted to the front of the bay of the FSCS Panel and are properly fixed.
- The LED/Switch Controller card will be installed onto the back of one of the display cards.
- After the above installation, HOA Modules are connected using the Ribbon Cables.
- LED Switch Controller will be connected to the FSCS Controller using 4 core Communication Cable.

7.2 Visual Inspections

- Carry out a visual inspection from outside & inside of installed Smoke management system.
- Visually check to ensure that all cards, switches, LEDs and customized mimic panel are installed in line with approved SMS drawings, Approved Material Submittal, Project Specification and in line with manufacturer's recommendations & security standard and approved cause & effect matrix.

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7.3 Pre Commissioning Checks and Cold Testing

- Ensure the installation of the back box is proper.
- Ensure all cables are identified properly with cable markers.
- Ensure all switches and LEDs are installed towards the correct equipment and its labelling is properly done.
- Correct deficiencies if observed on pre-testing. Malfunctioning or damaged items shall be re-tested until satisfactory performance and conditions are achieved.
- Record results in pre-commissioning check list

7.4 Power up

- Check 24V DC and data cables.
- Check data & 24V DC cable polarity.
- Check data & 24V DC cable termination.
- Power up FSCS to energise SMS panel.

7.5 Testing & Commissioning

Note: Prior to the testing of SMS, a notification has to be made through the Safety Engineer to all site people engaged in the plant rooms where Air Handling Units(AHU), Staircase Pressurization Fans (SPF), Laboratory Plume Fans (LEF), Lift Pressurization Fans (LPF) and Smoke Exhaust Fans (SMEF) are located to avoid any accidents as this test will switch on these fans immediately. Notices shall be pasted on the walls of these plant rooms. Also, the coordination and presence of the concerned suppliers is required for the test of all fans and dampers.

- Testing of Damper OPEN/CLOSE push buttons – OPEN/CLOSE push buttons are provided to manually OPEN or CLOSE the Supply Motorized Dampers and Return Motorized dampers. OPEN/CLOSE status LEDs are provided to show the actual status of these dampers. These push buttons can be tested in the following method:
- Push the ON button down to manually OPEN any of the above mentioned dampers. (In normal condition, all the dampers will be closed. Hence all RED LEDs will be “ON” to indicate that dampers are closed.) The Damper will get the 24V DC and it will start to open. When it is fully opened, the RED LED will change to GREEN LED to indicate that the damper is OPEN. Then push the “AUTO” Button to make all the dampers in AUTO Mode. Then to close the damper, Push the OFF Button so that the 24V will be cut off from the damper and all the dampers will be closed and all the green LED will go to RED after all dampers are closed. Then push the button “AUTO” to make all dampers in AUTO Mode. All dampers can be tested and confirmed in this way.
- Testing of CLOSE/OPEN LED- These LEDs are provided to indicate the actual status of Supply Motorized dampers and Return Motorized dampers. Push the

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corresponding OPEN/CLOSE button to change the damper status and wait for the damper to operate. The LED status will change when the damper status changes to OPEN to CLOSE or vice versa.

- Testing of ON/OFF/AUTO switches – These are provided to manually turn ON the AHU, SPF, LPF, LEF and SMEF. These are 3 positioned switch and positions are printed on the panel. Flip up the corresponding switch to turn the fan ON and wait for the action to be taken. Status LED will glow to indicate the actual status of the MCC. Flip down to OFF and then to AUTO to make the fan bring back to AUTO position. Status LED also will change according to MCC status.
- Testing of ON/OFF/AUTO LEDs – These are to provide the MCC status of SPF, LPF, SMEF and CPF. Turn on the corresponding switch and wait for the fan to turn ON. LED status will change to ON from OFF & AUTO LEDs.
- LAMP test Switch – A switch is provided to test all LEDs. Press the LAMP TEST switch and make sure all LEDs are turned ON. Turn OFF the switch to turn OFF the test.

7.6 Witness Demonstrations / Completion

After the successful commissioning the results will be recorded on the testing and commissioning sheets contained within section 8 of this document.

8 ATTACHMENTS

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| 8.1 | Inspection & Test Plan | ITP-6012-0200 Rev.03 |
| 8.2 | Check Sheet | FM-6012-0200 Rev.03 |
| 8.3 | Risk Assessment | RA-6012-0200 Rev.03 |