COMMISSIONING REPORT

For

Summit Foundation

Washington DC

Prepared By:

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EXECUTIVE SUMMARY

The goal of this commissioning process is to verify for Summit Foundation that the mechanical equipment, lighting controls, domestic hot water and building automation systems serving their Offices function interactively in compliance with the owners project requirements and the project construction documents.

In addition the commissioning process helped to facilitate an orderly and efficient transfer of the systems to Summit Foundation’s Operations and Maintenance personnel and meet the LEED requirements for the Fundamental and Enhanced Commissioning Credits.

The commissioning process started early in the project design phase and helped the owner to develop the Owners Project Requirements (OPR) which identified specific goals and objectives for the project. From the OPR the design team developed a Basis of Design, which was reviewed by the CxA and included a detailed summary of the proposed building systems and how they would meet the OPR. A Commissioning Plan was developed and document reviews were conducted at 50% and 95% of design. Commissioning specifications were developed and included in the project specifications.

As the project moved into construction the Commissioning Plan was updated and once all the sub-contractors were engaged a Commissioning Kick Off meeting was held on site to identify roles and responsibilities and objectives for the Commissioning Team, which included the Owner, General Contractor, Mechanical, Electrical, Plumbing and Control sub-contractors, Test and Balancer and the Commissioning Agent.

A commissioning review was conducted of all relevant shop drawings and comments were incorporated into the design team’s submittal review process. Periodic site visits were conducted to verify installation was proceeding in accordance with project design documents. Any commissioning related issues observed during construction were tracked on an Issues log and resolution of each issue was verified by the Commissioning Agent.

Equipment start-ups and preliminary operational checks were completed by the sub-contractors and test and balancing was completed once systems were fully operational and temperature controls were completed.

Functional Performance testing was carried out during the first week of February 2016 by Stephen Tarbuck of BIOS with representatives from Pritchett Controls, Limbach and Crestron. The systems tested were:

- VAV terminal units and associated sequences
- Thermafusers were tested in heating and cooling mode
- IT Room Exhaust fan was checked for correct operation.
All lighting systems were checked for correct operation including vacancy sensors, daylight sensors and conference room lighting controls.

The domestic hot water system was tested for correct operation.

The commissioning process verified that the design, installation and set-up of the systems serving the Summit Foundation Offices meet the Owners Project Requirements, the Basis of Design and the Contract Documents. An end of warranty review will be conducted on site later this year and a report will be completed to identify any operating issues and provide recommendations and system adjustments.

Commissioning Issues:
1. **IT Room exhaust fan** ran constantly and did not start / stop when the thermostat set point was changed during testing. This was adjusted by the HVAC contractor and the fan control was demonstrated to only operate when the thermostat set point was exceeded. It was adjusted to run when the room set-point rises above 90° F. (adj.)

2. **AHU Supply Air Temperature Set-point**: during testing it was identified that the AHU supply air temperature had been reset to deliver 68° F. in response to complaints that the interior spaces in the Summit offices were too cold. This resulted in perimeter south facing offices over heating when there were solar heat loads due to the supply air not being not having cold enough air to provide cooling to the perimeter spaces. This was brought to the attention of the building engineer and the discharge air set-point at the AHU was changed to 60° F. (this is normally reset to 55° – 58° F during the summer)

3. **Interior VAV zones** were set to operate at a constant flow. As the interior zones had no heating coils this resulted in overcooling the spaces during normal operation. The zone minimum airflow rates were reset between 20-30% of maximum design airflow to allow the VAV terminal to modulate the airflow in response to the thermostat.

4. **Small Conference Room** supply air volume had been reset and was not able to supply design airflow. This combined with the high supply air temperature resulted in severe over heating when this room was used for a full staff meeting. The VAV terminal was reset to deliver design airflow at full demand for cooling and minimum set-point for low load conditions.

5. **Perimeter Zone Heating** sequence operates in 2 stages. During testing it was identified that stage 2 of the heating sequence did not energize the electric heating coils. An adjustment to the control sequence rectified this issue and the operation of the heating coils was confirmed during the functional testing.
6. **Perimeter VAV terminals**: several of the perimeter VAV’s were noisy. Additional batt insulation was installed above the ceiling at these units.

7. **Thermafusers**: the remote adjusters used to change the set-point at the temperature sensor in the diffuser was registering an error signal. Two dip switch settings were changed in the control module which allowed the adjuster to only register the setting adjustment.

**Outstanding Issues:**

1. **CO2 sensors**: at the Conference Rooms and Lounge were not functioning correctly at the time of the testing.

2. **BAS graphics and controls**: at the time of Functional Testing the control interface to the building BAS had not been completed and the graphics had not been uploaded.

3. **Lobby Display**: the Lobby Display screen graphics and interface to the BAS had not been completed.

4. **Thermafuser remote adjuster**: for Office 105 was missing.

5. **Thermafuser control panel**: in office 104 did not show a power light.