



Circular Letter No.: 2019.164

Issue Date: 29 November 2019

Application: BEAM Plus NB Version 1.1 and 1.2

Effective Date: 29 November 2019

EU 10 Testing and Commissioning

1. The Technical Circular Letter hereby announces an update to the credit content for the following credits under BEAM Plus NB v1.1 and v1.2:
 - EU 10a Commissioning specifications
 - EU 10b Commissioning plan
 - EU 10c Commissioning
 - EU 10d Commissioning report
2. The requirement given in Appendices 8.5.1 to 8.5.4 of the BEAM Plus Manuals is hereby updated with the enclosures in Annex A and Annex B of this Technical Circular.
 - Pages Annex A-1 to A-2 shall replace all contents specified in Page 8-15 to 8-18 under BEAM Plus NB v.1.1; and
 - Pages Annex B-1 to B-2 shall replace all contents specified in Page A-15 to A-18 under BEAM Plus NB v1.2.
3. For the clarity of the assessment, the Applicant should provide a summary table with cross-referencing between the sub-items listed in the annexes against the relevant sections in the submitted document (i.e. commissioning specification, plan, checklist, report).
4. Approved PA projects: For projects that have already completed PA and have certain assessment approach approved, the Applicant may opt to adopt the same assessment criteria for FA or voluntarily comply with this Technical Circular. For the avoidance of doubt, the Applicant shall provide PA evidences (e.g. extract of the PA report, documents submitted for assessment in PA, etc) in subsequent assessments to support the intention of using the same assessment methodology as in PA.

A handwritten signature in blue ink, appearing to be "KM So", is written above a horizontal line.

Mr KM So
Chairperson of Standards Sub-committee

Annex A: Updated Credit Content for Appendices 8.5.1 to 8.5.4 under BEAM Plus NB v.1.1

8.5 PROVISIONS FOR ENERGY MANAGEMENT

- 8.5.1 COMMISSIONING SPECIFICATIONS**
- 8.5.2 COMMISSIONING PLAN**
- 8.5.3 COMMISSIONING**
- 8.5.4 COMMISSIONING REPORT**
- 8.5.5 INDEPENDENT COMMISSIONING AUTHORITY**
- 8.5.6 OPERATIONS AND MAINTENANCE MANUAL**
- 8.5.7 ENERGY MANAGEMENT MANUAL**
- 8.5.8 OPERATOR TRAINING AND FACILITIES**

8.5.1 COMMISSIONING SPECIFICATIONS

Commissioning specifications shall be included in the construction documents and embrace the following content:

- i. Scope and details of the commissioning process;
- ii. Qualifications and skills required by the commissioning agent;
- iii. Detailed description of the responsibilities of all parties included in the commissioning process;
- iv. Systems, equipment and components to be commissioned;
- v. Requirements for functional checklists and start-up;
- vi. Functional performance testing process;
- vii. Specific functional performance test requirements, including testing conditions and acceptance criteria for each piece of equipment being commissioned;
- viii. Provisions for resolving deficiencies (e.g. defects liability period, contractor's responsibility); and
- ix. Requirements for reporting and documentation for commissioning.

8.5.2 COMMISSIONING PLAN

To execute commissioning in a comprehensive and orderly manner a commissioning plan, covering a given system, equipment or component shall be prepared.

The commissioning plan shall include the following content:

- i. Goals and objectives;
- ii. General project information;
- iii. Systems to be commissioned;
- iv. Description of the Commissioning team, including team members, roles and responsibility;
- v. Description of the Commissioning team's communication protocol, coordination, meetings and management;
- vi. Development of system (if applicable) functional test procedures for the following:
 - HVAC&R systems and associated controls;
 - Light and daylighting controls;

- Domestic hot water systems (including swimming pool if heating is provided);
 - Lift and escalator systems; and
 - Renewable energy systems;
- vii. Verification of system performance;
- viii. Reporting deficiencies and the resolution process; and
- ix. Acceptance of the building systems.

8.5.3 COMMISSIONING

Start-up and inspection checklist should comprise the checks and tests to determine that all components, equipment, subsystems, systems, and interfaces between systems operate in accordance with specifications and construction documents.

The results of the start-up and check-out should be documented and must be performed according to the manufacturer's written instructions for the systems and equipment being commissioned, and the as-fitted construction documents.

8.5.4 COMMISSIONING REPORT

The Commissioning report shall include the following content:

- i. Executive summary of commissioning process and results, system deficiencies identified and resolutions, outstanding issues identified;
- ii. List of participants and their respective roles;
- iii. Brief building description;
- iv. Commissioning process scope;
- v. Installation verification checklist;
- vi. List of systems commissioned;
- vii. Equipment documentation;
- viii. Functional performance tests including date and time of test, individuals present during testing, visual inspection observations, sensor checks, device checks, operating mode tests and results;
- ix. List of outstanding commissioning issues and any testing that is scheduled on a later date, with justifications on the deferral of test; and
- x. All outstanding deficiencies identified during or as a result of commissioning activities should be listed and highlighted, with justifications on the deferral to rectify deficiencies.

Annex B: Updated Credit Content for Appendices 8.5.1 to 8.5.4 under BEAM Plus NB v.1.2

8.5 PROVISIONS FOR ENERGY MANAGEMENT

- 8.5.1 COMMISSIONING SPECIFICATIONS**
- 8.5.2 COMMISSIONING PLAN**
- 8.5.3 COMMISSIONING**
- 8.5.4 COMMISSIONING REPORT**
- 8.5.5 INDEPENDENT COMMISSIONING AUTHORITY**
- 8.5.6 OPERATIONS AND MAINTENANCE MANUAL**
- 8.5.7 ENERGY MANAGEMENT MANUAL**
- 8.5.8 OPERATOR TRAINING AND FACILITIES**

8.5.1 COMMISSIONING SPECIFICATIONS

Commissioning specifications shall be included in the construction documents and embrace the following content:

- i. Scope and details of the commissioning process;
- ii. Qualifications and skills required by the commissioning agent;
- iii. Detailed description of the responsibilities of all parties included in the commissioning process;
- iv. Systems, equipment and components to be commissioned;
- v. Requirements for functional checklists and start-up;
- vi. Functional performance testing process;
- vii. Specific functional performance test requirements, including testing conditions and acceptance criteria for each piece of equipment being commissioned;
- viii. Provisions for resolving deficiencies (e.g. defects liability period, contractor's responsibility); and
- ix. Requirements for reporting and documentation for commissioning.

8.5.2 COMMISSIONING PLAN

To execute commissioning in a comprehensive and orderly manner a commissioning plan, covering a given system, equipment or component shall be prepared.

The commissioning plan shall include the following content:

- i. Goals and objectives;
- ii. General project information;
- iii. Systems to be commissioned;
- iv. Description of the Commissioning team, including team members, roles and responsibility;
- v. Description of the Commissioning team's communication protocol, coordination, meetings and management;
- vi. Development of system (if applicable) functional test procedures for the following:
 - HVAC&R systems and associated controls;
 - Light and daylighting controls;

- Domestic hot water systems (including swimming pool if heating is provided);
 - Lift and escalator systems; and
 - Renewable energy systems;
- vii. Verification of system performance;
- viii. Reporting deficiencies and the resolution process; and
- ix. Acceptance of the building systems.

8.5.3 COMMISSIONING

Start-up and inspection checklist should comprise the checks and tests to determine that all components, equipment, subsystems, systems, and interfaces between systems operate in accordance with specifications and construction documents.

The results of the start-up and check-out should be documented and must be performed according to the manufacturer's written instructions for the systems and equipment being commissioned, and the as-fitted construction documents.

8.5.4 COMMISSIONING REPORT

The Commissioning report shall include the following content:

- i. Executive summary of commissioning process and results, system deficiencies identified and resolutions, outstanding issues identified;
- ii. List of participants and their respective roles;
- iii. Brief building description;
- iv. Commissioning process scope;
- v. Installation verification checklist;
- vi. List of systems commissioned;
- vii. Equipment documentation;
- viii. Functional performance tests including date and time of test, individuals present during testing, visual inspection observations, sensor checks, device checks, operating mode tests and results;
- ix. List of outstanding commissioning issues and any testing that is scheduled on a later date, with justifications on the deferral of test; and
- x. All outstanding deficiencies identified during or as a result of commissioning activities should be listed and highlighted, with justifications on the deferral to rectify deficiencies.