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**General code for acceptance of constructional quality
of greenhouse**

温室工程质量验收通则

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General code for acceptance of constructional quality of greenhouse

1 Scope

This standard specifies the content, procedures, general requirements for the acceptance of constructional quality of greenhouse, as well as the documents to be submitted for the completion acceptance, the requirements for quality warranty, the training of use & management personnel after completion.

This standard applies to the engineering quality acceptance of greenhouses, which are used for production and scientific research. Other greenhouses may refer to this standard.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 50204-2002 Code for acceptance of constructional quality of concrete structures

GB 50242-2002 Code for acceptance of construction quality of water supply drainage

GB 50300-2001 Unified standard for constructional quality acceptance of building engineering

GB 50303-2002 Code of acceptance of construction quality of electrical installation in building

GB/T 19165-2003 The structure and properties requirement for sunlight greenhouse and plastic tunnel

NY/T 610-2002 Technical specification for solar energy greenhouse

NY/T 1145-2006 Technical code for design construction and acceptance of greenhouse foundation

3 Terms and definitions

The terms and definitions, which are defined in GB 50300-2001, are applicable to this standard.

4 Content and procedures for acceptance of constructional quality of greenhouse

4.1 The constructional quality acceptance of greenhouse includes two parts: constructional (installation) quality acceptance and operational performance acceptance.

4.2 The construction (installation) quality acceptance of the greenhouse is first carried out, according to the divisional and item works. After each divisional and item work has passed the acceptance, organize the overall completion acceptance of the constructional (installation) quality of the greenhouse. Divisional and item works are divided, according to Appendix A of this standard.

4.3 The construction organization can deliver the greenhouse to the building organization for trial operation, after the completion acceptance of the greenhouse is qualified. The trial operation period is 1 year.

4.4 The operating performance acceptance shall be completed, during the trial operation of the greenhouse.

4.5 The operating performance acceptance of the greenhouse project includes lighting performance, heat preservation (airtight) performance, ventilation and cooling performance, heating performance, waterproof performance, etc.

5 Requirements and organization of acceptance of construction (installation) quality for greenhouse

5.1 Requirements

5.1.1 The acceptance of construction (installation) quality of greenhouse shall comply with the provisions of 3.0.1 ~ 3.0.3 in GB 50300-2001.

5.1.2 The construction quality of the greenhouse foundation shall meet the relevant provisions of NY/T 1145-2006.

5.1.3 The construction (installation) quality of the greenhouse's reinforced concrete framework, columns, beams, roof slabs, etc. shall meet the relevant

6 Requirements and organization of operating performance acceptance of greenhouse projects

6.1 Requirements

6.1.1 The operating performance of solar greenhouses and plastic greenhouses shall meet the requirements of GB/T 19165-2003 and NY/T 610-2002.

6.1.2 The operating performance of the multi-span greenhouse shall meet the requirements, which are stipulated in the contract, between the construction organization and the building organization. It shall be checked and accepted, in accordance with the contract agreement or the method proposed by the on-site experts.

6.2 Organization of acceptance

6.2.1 The acceptance of greenhouse's operation performance shall be organized by the building organization; it shall entrust the relevant qualified quality inspection organizations, to conduct inspection and quality assessment.

6.2.2 The testing of the greenhouse's operating performance can be carried out in a specified period of time OR on-site in real-time. Generally, the testing of greenhouse heating and heat preservation performance shall be carried out, in the coldest month during the greenhouse operation. The testing of cooling performance shall be carried out, in the hottest month during the greenhouse operation. However, the specific time for testing shall be agreed in advance.

6.2.3 When the greenhouse's operation performance fails in the testing, the building organization shall organize the testing organization, construction organization, design organization, equipment supplier, to jointly analyze the reasons for the failure; propose modification or remedial plans; rectify the greenhouse project; propose the analysis and rectification report of performance and quality inspections.

6.2.4 If any organizations related to the greenhouse's operation performance disagrees with the test results, the building organization may request the quality inspection organization to conduct a re-inspection. If the testing result maintains the previous testing conclusion, it will be the final testing result. Otherwise, the building organizations may entrust other testing organizations to test, OR request a more authoritative testing agency to conduct testing and arbitration.

6.2.5 After the testing of greenhouse's operation performance is completed, the testing organization shall submit a test report to the building organization.

6.2.6 If the acceptance of greenhouse's operation performance is qualified within the specified time, the greenhouse's constructional quality will be deemed qualified.

7 Quality warranty and training of use management

personnel training for greenhouse projects

7.1 When the construction organization submits the application report for the completion acceptance of the greenhouse project, to the building organization, it shall issue the quality warranty certificate of the greenhouse project to the building organization. It shall specify the warranty scope, warranty period, warranty responsibility of the greenhouse, in the quality warranty certificate.

7.2 The warranty period of the greenhouse project is calculated, from the date when the construction (installation) quality is completed and accepted.

7.3 If the greenhouse project needs to continue to be used, after its reasonable service life, the building organization shall entrust the survey and design organizations, which have the corresponding qualification level, AND the relevant greenhouse project quality inspection organization, for appraisal; take measures such as reinforcement and maintenance, according to the appraisal results; redefine the service life.

7.4 Under normal conditions of use, the minimum warranty period for greenhouse projects is:

- The minimum warranty period for the foundation and main structure of the greenhouse is 10% of the reasonable service life. The reasonable service life is stipulated in the design documents. Generally, the service life of the prefabricated hot-dip galvanized steel pipe skeleton plastic greenhouse and the solar greenhouse, shall not be less than 5 years. The service life of plastic film multi-span greenhouses shall not be less than 10 years. The service life of glass greenhouses and polycarbonate greenhouses shall not be less than 15 years.
- Heating system, water supply and drainage pipes, electrical pipelines, equipment installation: 2 years.
- Fans, wet curtains, seedbeds, computer control equipment, irrigation equipment, window openers, curtain pullers, roller blinds (quilt) machines: 1 year.
- Glass, polycarbonate board, plastic film, sunshade net, insect-proof net, outdoor thermal insulation quilt of solar greenhouse: 1 year.

installation and construction drawings;

5) The as-built drawing of the greenhouse heating system, including the floor plan, the system drawing, the installation joint drawing of the heating system;

6) Greenhouse electrical as-built drawings, including lighting plan, power plan, system diagram, electrical control schematic diagram;

7) As-built drawing of greenhouse equipment, including: seedbed layout drawing and its installation joint diagram, layout and installation drawing of ventilation and cooling equipment (including window opening mechanism, exhaust fan, circulation fan, wet curtain system, etc.), layout and installation drawing of shading and heat preservation system equipment (including external shading, internal thermal insulation, external thermal insulation, etc.).

b) Construction acceptance records of concealed projects, including the detailed drawings of foundation, base, embedded pipelines, embedded parts, etc.;

c) Product manuals (including main technical performance indicators, etc.), implementation standards, product qualification certificates, quality guarantees for main equipment and materials;

d) Greenhouse operating instructions (including safe operation procedures and other operation management systems);

e) Training records of greenhouse operation and management personnel.

8.2 When the greenhouse project is completed and accepted, the supervision organization shall submit the following documents, to the building organization, according to the construction content of the greenhouse:

- Preliminary acceptance report of greenhouse construction (installation) project, including the acceptance record documents of construction method, construction quality, construction data, each divisional (sub-divisional), item work etc.;

- Assessment report of greenhouse construction (installation) project quality.

8.3 After the completion and acceptance of the greenhouse project, the supervision organization shall submit the following documents to the building organization:

- Summary of supervision work;

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Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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