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# INDUSTRY STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

# LY/T 1990-2011

Replacing LY/T 1991-2011; LY/T 1992-2011; LY/T 1993-2011; LY/T 1990-2011

## Forest engineering--Design guidelines for equipment systems

森林工程 装备系统设计导则 总纲

**(English Translation)**

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## Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard integrates and revises LY/T 1990-2011 "General Guidelines for the Design of Forest Engineering Equipment System", LY/T 1991-2011 "Forest Design Guidelines for Engineering Equipment System for Seedling Project", LY/T 1992-2011 "Forest Engineering Equipment System Design Guidelines for Afforestation Project" and LY/T 1993-2011 "Guidelines for the Design of Forest Engineering Equipment System Forest Logging Engineering".

This standard was proposed and managed by the National Forest Engineering Standardization Technical Committee (SAC/TC 362).

The organization responsible for drafting this standard. Harbin Institute of Forestry Machinery, National Forestry and Grassland Administration.

Participated in the drafting of this standard. Northeast Forestry University, Fujian Agriculture and Forestry University, East China Forestry Investigation and Planning Institute of State Forestry and Grassland Administration, Daxinganling Forest Investigation and Planning Institute.

## 1 Scope

This standard specifies the basic principles, classification and design procedures for the design of forest engineering equipment systems.



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This standard applies to the design of forest engineering equipment systems.

## 2 Terms and definitions

The following terms and definitions apply only to this document.

Process system

Determine the organic composition of several procedures required for function realization and transformation according to the technological process of forest engineering projects.

Process capability

The extent to which the equipment system meets the engineering quality requirements when the forest engineering operation process is in a stable and controlled state.

## 3 Basic principles

The design of forest engineering equipment system should follow the following basic principles.

a) System optimization, the pursuit of the optimization of comprehensive benefits;

b) Safe and reliable to ensure the personal safety and equipment safety of users;

c) Energy saving and emission reduction to meet the requirements of low-carbon economy;

d) Adjust measures to local conditions and make full use of the favorable factors of the operation site;

e) Protect ecology, protect forest ecological environment and sustainable forest development;

f) Advanced technology is conducive to the popularization and application of advanced technology.

## 4 Categories

According to the nature and type of forest engineering, the forest engineering equipment system can be divided into systems, sub-systems, and unit equipment. Nursery See Appendix A for the system classification of industrial processes, see Appendix B for the system classification of site reforestation operations, and the system classification of forest harvesting processes.

See Appendix C for classes.



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## 5 Design procedure

The process of forest engineering equipment system design can be divided into five stages, namely the planning stage, the equipment system combination design stage, and the equipment system design stage.

Planning document preparation stage, equipment system design comprehensive evaluation stage and trial operation stage. The equipment system design procedure is shown in Figure 1.

### 5.1.1 Analysis of equipment requirements

The equipment system requirements analysis may include.

a) Design goals and tasks;

b) Analysis of the current status of equipment at home and abroad;

c) The regional economy, ecological environment, natural conditions, transportation, mountain topography, operation objects, installation Analysis of the status quo of relevant equipment resources available in the preparation market;

d) Analysis of the basic situation of the organization and operation of the equipment organization.

### 5.1.2 Analysis and confirmation of related information

Analysis and confirmation of relevant information may include.

a) Compliance analysis;

b) Analysis of current situation at home and abroad.

### 5.1.3 Suggestions for equipment system

The equipment system proposal can mainly include equipment type selection, basic combination, and rough investment..

### 5.1.4 Preparation of feasibility study report

#### 5.1.4.1

The main content of the feasibility study report the feasibility study report mainly includes.

a) The purpose and significance of the feasibility study;

b) The basic content of the feasibility study, including.

1) General;



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2) Analysis of the status quo of the operating area's social economy, natural conditions, ecological environment, and transportation;

3) Analysis of domestic and foreign equipment systems and their status quo and development trends;

4) Comparison and analysis of basic design schemes of equipment system;

5) Feasibility analysis of equipment system design scheme;

6) Determination and conclusion of equipment system design plan;

7) Environmental protection analysis;

8) Investment budget and effect analysis;

9) Feasibility conclusion

10) Attachments, attached tables and drawings.

#### 5.1.4.2 Requirements of the feasibility study report

The feasibility study report should meet the following requirements.

a) The source of information is reliable and time-sensitive;

b) The forest engineering project overview, the natural conditions of the operation area, and the ecological environment are objectively analyzed;

c) The schemes are compared and selected scientifically, and the demonstration is sufficient, and they meet the requirements of ecological construction and environmental protection;

d) Benefit analysis seeks truth from facts;

e) The investment estimate is reasonable.

### 5.2.1 Function and functional decomposition

The function and function decomposition procedure are.

a) Determine the operation process according to the project goal;

b) Determine the operating process system and its functions according to the operating technology;

c) Decompose process system functions into sub-system functions, subsystem functions, and unit process functions.

See Fig. 2 for the process system of nursery operation, see Fig. 3 for the reforestation process system of site renewal, and Fig. 3 for the process system of forest harvesting operation.



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