Research on the Development Prospect of Assembled Passive Building Based on Green Development Concept

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Abstract: In recent years, the vigorous development of the construction industry has brought about serious problems of environmental pollution and resource consumption. In order to reduce the negative impact that the construction industry has on the natural environment, this paper, from the perspective of environmental protection, studies the pollution and high consumption problems existing in the production and use of traditional construction industry, compares and analyzes the green and energy-saving advantages in the construction and using phase of assembled passive building, and at the same time, combined with our country is vigorously promoting the assembled passive building and the green development, concluded that the assembled passive building is the new development direction of China's construction industry.

1. Introduction
With the development of urban construction in our country, the impact of the construction industry on the environment and pollution have become increasingly serious. Green development is an economic growth and social development mode aimed at efficiency, harmony and sustainability. At present, China advocates the concept of green sustainable development concept and can not exchange economic benefits at the expense of the environment. Therefore, we must fully raise our awareness of environmental protection and strengthen the combination of the concept of construction engineering and green environmental protection. At present, the impact of the construction industry on the natural environment is mainly caused by the excessive consumption of natural resources and the large amount of wastes during construction. In the course of its use, more energy is consumed in maintenance and auxiliary facilities in the later using period.

2. Environmental problems existing in the construction of traditional construction industry:

2.1 Noise pollution
With the expansion of urban construction and the increasingly complex construction environment, the noise pollution in the construction industry has become increasingly prominent. The noise generated during the construction mainly includes construction noise, noise from driving of vehicles transporting earthwork and other construction materials and noise from various construction machines. Features are endangered, time concentrated, fixed position. In particular, construction at night has a great impact on the life of the surrounding residents.

2.2 Soil erosion and vegetation destruction
In addition to occupying the land itself, the construction process will bring damage to the surrounding
ecological environment. Foundation work in the pre-construction stage has the greatest impact on the surface of the land. Landslides can form on the surface after heavy rains and large amounts of material wastes are generated during the construction period. If the wastes are disposed of improperly the surrounding environment would be affected.

2.3 Air pollution
Air pollution is the most direct and the most serious environmental damage, including dust and exhaust pollution. Dust will not only seriously affect the living and sanitation of the surrounding residents, but also adversely affect the crops along the roadside. Dust pollution comes mainly from two aspects: (1) Road dust caused by sprinkling due to uneven road surface and vacuum suction of vehicle after material transportation. (2) Loosening of dust caused by the wind due to dryness on the ground during loading and unloading of materials. Engineering is inseparable from the transport of vehicles, vehicle work will have a lot of vehicle exhaust, especially carbon monoxide, nitrogen dioxide, lead and other important hazardous substances, these pollutants not only harm human beings will cause some damage to the land.

2.4 Water pollution
Large quantities of water are used in construction projects, and the used water is released containing contaminants, which are drained arbitrarily onto the earth's surface, causing groundwater to be polluted. More seriously, the surrounding drinking water is also affected.

2.5 Waste of materials
The traditional construction method has large consumption of water and electricity, and will produce a large number of construction waste. The survey found that most of the construction waste without any treatment will be transported to the countryside or village, with open dumps or landfill manner, wasting a lot of land, garbage removal and other construction funds.

3. Assembled passive building
Assembled passive building is the intersection, integration and innovation of two fields: assembled building and passive building. Assembled buildings are the columns, beams, slabs, walls and other components produced in the factory, which are then transported to the construction site to build houses like building blocks to replace labor-intensive production with technology-intensive, scale-based manufacturing methods, with industrial site to replace on-site assemble wet job construction mode. Passive houses refer to buildings that do not require active energy, and rely solely on passive collection of energy to maintain comfort and temperature and humidity.

3.1 Environmental advantages of assembled building
Assembled building environmental advantages are mainly reflected in the following three aspects: (1) Energy and materials saving. Molds and production equipment can be reused after a one-time investment, supplies less, save resources and costs. Especially in the areas of energy saving and land saving, the realization of large-scale industrialized operations has led to an increase in the recycling rate of steel template, reduction of construction waste, reduction of material loss and increase of recyclable materials. (2) Green. Site assembly, connection can avoid or reduce the impact of construction on the surrounding environment and is helpful to environmental protection and resource conservation. The implementation of industrial operations, greatly reducing the dust and other civil construction paint the scene, not only conducive to the physical and mental health workers, but also to minimize the impact on the surrounding environment. (3) Saving water and electricity. Factory prefabricated concrete components, do not use wet operations, thereby reducing the on-site concrete pouring and "garbage source" generation, while reducing the cleaning of mixer, fixed pump and other operating tools., the implementation of factory conservation concrete, a large number of waste water, waste Pulp and other pollution sources have been effectively controlled, compared with the traditional
construction methods, saving more than 30% water.

3.2 Environmental advantages of passive building
Passive building environmental advantages are mainly reflected in the following two aspects: (1) More energy saving in use phase. The traditional "active" houses provide heat or cold with electricity, coal, gas and other energy-driven heating or air-conditioners, etc, and consume a large amount of energy to the outside due to the large amount of energy dissipated without special treatment. On the contrary, the new "passive" houses use more clean energy such as solar energy to reduce their dependence on non-renewable energy sources. On the other hand, the new "passive" houses greatly increase the heat-insulating property of houses, reduce the heat exchange inside and outside the houses and substantially reduce the total house energy consumption. (2) Low consumption in maintenance stage. In order to ensure the quality of passive houses, the initial construction process needs careful design and high-performance building components, so the construction cost will be higher than that of the traditional buildings. Often, passive home construction costs 5% to 7% more than traditional homes. However, looking at the entire life cycle of buildings, due to the extremely low operating and maintenance costs of passive houses, the post-use cost is greatly reduced, resulting in a reduction in the consumption of natural resources in the passive maintenance phase of the house.

Assembly and passive are the two main directions of future buildings. They are actually two main aspects and two main features of a modern green building. With the continuous improvement of assembly energy-saving design standards, the final assembly and passive will tend to be unified. If the energy efficiency standards for fabricated buildings are too low, large amounts of energy can not be saved using passive principles, consuming too much energy, leading to increased energy costs and environmental costs, and will not be supported by users and national policies. Ultimately, there will be no market. The passive building to improve energy efficiency and its associated comfort at the same time, the efficiency of the construction method should also be improved, passive building will inevitably be assembled. Assembled passive building As the next generation of buildings, green teaching experiment building of Shandong Jianzhu University is the first steel structure, assembly type passive low energy teaching experiment building has been successfully implemented in our country.

4. Conclusion:
Assembled passive building combines the green advantages of assembled building in the construction phase and the energy-saving advantages of passive building in the using phase. Compared to the traditional architectural forms, assembled passive building is more in line with China's current development goals. The successful practice of the first assembled passive building in China has also brought this new form of construction into the public's field of vision. All kinds of realities show that this is a change in the construction industry, but also the future direction of the construction industry.

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