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Research on Public Safety-based Construction Organization Design Specification of City Comprehensive Transportation Hub

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Abstract. The purpose of this article is to follow the strategy of sustainable development of city comprehensive transport hub request, based on the public security construction principle, frame integrated transport hub construction organization design process.

Introduction

At present, urban traffic construction of China is at a peak period. Three-dimensional traffic idea very respected today, and the city comprehensive transportation hub(CCTH) engineering design management mode which needs to be standardized. As a result, it is becoming one of the focuses of attention in the industry research. And city comprehensive transportation hub project because of its social function of load (very large scale; surrounding a high population density; pickup in passenger traffic; Units cover a wide range, etc.) and its own new characteristics (urban functional significant; high strength radiation surrounding areas; an important part of city emergency platform, etc.) had decided the public safety philosophy as the dominant construction of organizational design principles. This will directly influence the safe operation of the whole traffic network and the set up of city public security system in China. It is necessary to public safety concept to ascend to the key project management theory, and to practice public safety concept priority during the hub project total life cycle. This paper is *based on public security priority for the construction organization design principles* of the new research perspective, the integrated transport hub to put forward new design principle of system framework.

Facing the public security problem

The city comprehensive transportation hub is the key node in the urban public transport system developing. This is a place with densely populated, a variety of equipment system coexistence, multiple transportation transfer, in which is containing a large number of unsafe factors. Once appears the disaster, will cause the social influence extremely serious major safety accidents. It is shown in Table 1.

Table 1. CCTH strategic characteristics brought about the public security problems

Strategic position of CCTH		Public security problems
Concentration of transportation modes	Pooled aviation, railway, rail transportation, high iron, bus, social vehicles and taxi	Endanger urban public security system Access the ripple effect Cause secondary disasters
Comprehensive function	The transfer of passenger transport and evacuation Transfer, parking, collection and distribution, and guide	Disaster magnitude of hub higher than the same strength disasters Disaster amplification effect significantly Number of casualties should be

		considered at the same time, economic losses and confidence of the people, and many other factors Long recovery cycle
Complicated facilities system	communication system, Platform screen door system, AFC(Automatic Fare Collection), the traction power supply system, ventilation and air conditioning system, water supply and drainage system, the escalator/on foot ladder system, put entrance guard system, broadcasting system, guide signs, passenger information system, SCADA (supervisory control and data acquisition), FAS (Fire Automation System), BAS(Brake Assist System), EMCS(environmental monitoring system), limited exchange system, clock synchronization system, television surveillance system, etc.	Chain reaction between facilities Significant correlation effects among equipment systems
Numerous social interest	Passengers, operations management department, multiple investors, the public, the property around the hub, businesses, government	

However, the old comprehensive transportation hub construction organization design principles were not based on public security. In the face of the new strategic characteristics challenge, the existing construction organization design specification was split the public security management into the operation stage instead of the project lifecycle. Each stage of the CCTH public security management builds out of the convergence. Each department safety management has not continuity. All above lead to the traditional hub construction organization design principle and the establishment of the "General Outlook of Safety" construction produce deviation. For the next such major infrastructure projects laid a security vulnerability within the operational life for the future. Based on this, build the construction design specification process under the perspective of public safety frame, will be able to realize the “General Outlook of Safety” from simple security department to set up the safety feed-forward control system in the early stage of the design principle method. This method for large domestic public project provides a set of operability technology support and builds process.

CCTH construction organization design principles setting

- **Comparison Analysis**

To complete the part of literature arrangement about comprehensive transportation hub organizational design principle has the following views. *Sheng zhiqian, Zhao bopping(2004)* puts forward the traffic hub design principles, design content and process. The design principles of localization in build humanized environment space, and finally achieve travelers, operation unit, and the city traffic system coordinating stakeholders benefit principle. *Yuan chengda(2011)* proposed based on traffic strategy, ecological principle design positioning. *China Academy of Transportation Sciences* in its key technologies of comprehensive passenger transport hub planning design and operation of management research, take the comprehensive passenger transport hub traffic organization and process design technology as one of the key technology to solve. *Luo jianhui, zhou ming, Xu fangchen(2006)* analyzes the advantage and issue of the construction of underground transit hub from several points of view After analyzing the design element of the underground hub, the planning principle and design method with the integrative utility of urban underground space are put forward. *Huang Jianzhong(2002) proposed* The existing main problems of hub construction boil down to: comprehensive complex function of land use stress; multiple transportation modes collection, mutual interference caused by transfer inconvenience; the urban traffic development, jam is serious; And supporting facilities and environment, etc. Therefore, Wuxi Railway Station take build efficient transfer, comfortable and convenient comprehensive transportation hub and a good city landscape, as the primary goal of the planning and design. Organizational principle to follow: fast accumulating and dispersing passenger flow, stereo shunt, convenient transfer functional leading organization design specifications. *Hao Liu, Jian Lu(2011)* setting project objectives is to build a 'convenient, comfortable, safe and efficient' comprehensive transportation hub in the 4th Annual International Conference on Next Generation Infrastructures. By the article of A Concept Design of Jiaxing's Comprehensive Transportation Station and Sustainable Neighborhood, the research developed two central design specifications to address the design problem. First, this document proposed a transit oriented development. Second, this document proposed an integrated sustainable design strategy for Jiaxing. Metrolinx(2011) publicized "Mobility Hub guidelines" have been prepared to guide planning and development about the city comprehensive transportation in the GTHA. The construction organization design specification of the document is to: a)Seamless integration of modes at the rapid transit station. b) Safe and efficient movement of people with high levels of pedestrian priority. c) A well-designed transit station for a high quality user experience. d) Strategic parking management. e) A vibrant, mixed-use environment with higher land use intensity. f) An attractive public realm. g) A minimized ecological footprint. h) Effective partnerships and incentives for increased public and private investment. i)Flexible planning to accommodate growth and change.

- **Analysis**

In all above opinion, The construction organization design principle generally set as: a) Network design principle mainly emphasis hub of the regional transportation and comprehensive utilization status of the land; b) Urbanization design principles and development of the design principle, the main emphasis on hub of transportation function, and at the same time coordinate urban planning, urban design and TOD synchronous development; c) The design principles of environmental protection and humanization design, the main emphasis on transportation hub and the sustainable development of the city, at the same time considering Equity Economy Ecology and objective condition limit, ensure the maneuverability of the standard. See Table2.

Table 2. Scope of Conventional Planning Analysis

Usually Considered		*Often overlooked*
Policy Style	• TOD • Urban planning • Urban design • Transportation strategies • Hub style	• Regional Security Monitoring System • City Safety System • Security Measures
Function Style	• Land use • Traffic function • Ease passenger traffic • Service design • Transit-oriented	• Eco-environmental Safety • Traffic Safety • Transportation Safety • Command and Monitor • Public Security-oriented
Sustainability	• "3E"principle(Equity\Economy\Ecology) • Green architecture • Community green	• Public Security-oriented

CCTH design principles process making

In general speaking, the domestic research on the construction organization design principle under the framework of public security is less. It is necessary to through effective system Settings, control mode, coordination means and security technology to obtain CCTH organization design code implementation process. The specific process sees Fig. 1

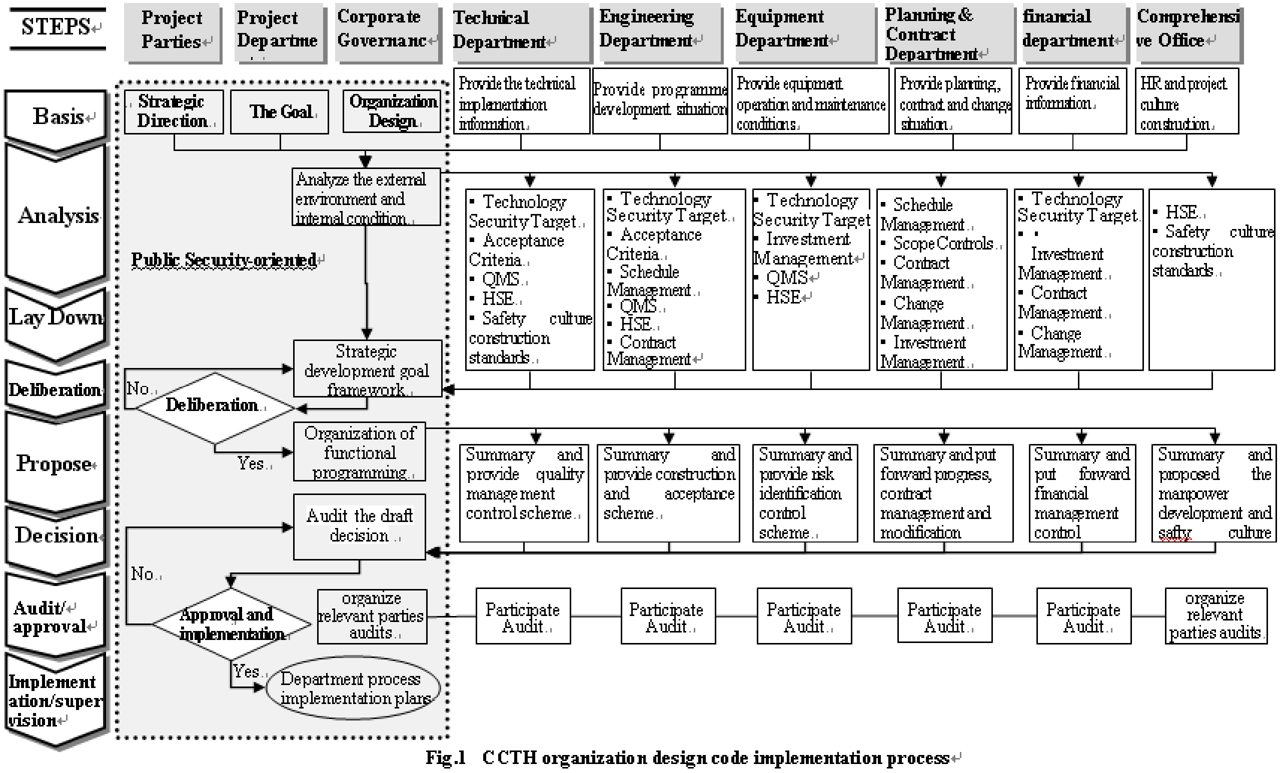

Fig.1 CCTH organization design code implementation process

Summary

This paper discusses the design principle of the CCTH in integrated theory framework , the organization structure, operation mechanism and phase function specification of safety control platform, which to provide the design specifications reference for future hub project safety platform construction.

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