



Research and Application of Urban Landscape Guidance and Control Elements Under the Background of National Territory Spatial Planning

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Abstract. With the establishment of the national territory spatial planning system, it is urgent to build an urban landscape guidance and control system to prevent urban homogenization resulting from rapid urbanization. This system aims to preserve urban context, shape distinctive styles, refine urban governance, and enhance living environments. Drawing upon the theoretical insights of both domestic and foreign scholars, this paper outlines the technical points of compiling the urban landscape guidance and control system. Through case studies of urban landscape design in Dingzhou City, architectural design in Enyang District, and enhancements in Kanmen Science and Technology Park, this paper applies the urban landscape guidance and control system across three spatial scales - overall, key areas, and plots - from the perspective of national territory spatial planning. This approach offers a fresh perspective for establishing a scientific, efficient, and practical urban landscape guidance and control system in the era of significant changes in spatial planning systems.

Keywords: National territory spatial; Urban landscape; Guidance and control elements

1 INTRODUCTION

With the successive completion of national territory spatial planning at all city levels, the spatial development strategy and refined urban development focusing on all domains and elements have proposed higher requirements for shaping urban landscapes and preserving cultural context. Therefore, how to achieve more effective urban landscape guidance and control under the new background of national territory spatial planning has become a key issue that requires immediate attention.

At present, there have been some explorations in the industry about the urban landscape guidance and control system under the background of national territory spatial planning. Cui^[1] proposed that the shaping and guidance of urban landscape should develop from the original planning with cities and towns as the main object to large-scale, multi-element, and full-coverage planning covering the overall national territory spatial

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areas. Some scholars have conducted certain discussions from the perspectives of urban design ^[2-3], transportation ^[4], green space systems ^[5], and other special planning, and changed the strategies in thoughts and methods, including object and scope adjustment, implementation, and bottom-line quantification. However, related research is still in its infancy, particularly regarding in-depth discussions on the new background, goals, ideas, and methods of urban landscape guidance and control.

The urban landscape has the characteristics of the times and publicity ^[6], which reflects the city's image, management, construction, and development. Currently, 16 provinces, two autonomous regions, four municipalities directly under the Central Government, and one special zone in China have completed the compilation of urban landscape guidance and control documents at the provincial level. Three key trends emerge: First, at the level of planning objects, there is a broadened scope of spatial management extending beyond urban and rural areas to cover the whole national territory, emphasizing comprehensive planning and lifecycle management. Second, at the planning value level, there is an ideological shift from efficiency orientation to quality orientation, prioritizing sustainable development. Third, at the technical level, there is a heightened emphasis on scientificity and implementability, with a focus on innovative mechanisms for both constraint and incentive guidance.

This paper explores the emerging trend of urban landscape guidance and control under the new policies of the National Air Force, aiming to propose a new idea and method for urban landscape guidance and control systems and provide a reference for similar initiatives in various provinces, cities, and regions. Additionally, this paper applies the content and requirements of transforming the urban landscape system to practical projects at the municipal, key area, and plot levels, integrating theoretical research with real-world optimization.

2 TECHNICAL POINTS FOR COMPILING THE URBAN LANDSCAPE GUIDANCE AND CONTROL SYSTEM

Urban landscape guidance and control is pivotal in urban design, which, in turn, holds significance in the national territory spatial planning system. Therefore, urban landscape guidance and control is vital for ensuring the high-quality development of national territory spatial planning, permeating every stage of planning, construction, and management ^[7]. The national territory spatial planning system is systematic and hierarchical. To build a matching urban landscape guidance and control system, it is necessary to integrate the concept and method of urban landscape guidance and control throughout the entire process of national territory spatial planning compilation and management ^[8]. This paper proposes an urban landscape compilation system at levels of overall, key areas, and plots, which responds to the new background of national territory spatial planning. By evaluating and screening all guidance and control elements, this paper aims to realize the complete translation of the three levels and seamlessly integrate urban landscape planning with planning approval, acceptance, and enforcement.

2.1 Screening Urban Landscape Guidance and Control Elements

At present, urban landscape planning incorporates a broad array of guidance and control elements from national to local levels, often characterized by complex and less targeted content. This approach hampers the self-expression of urban style designers and planners and undermines effective urban landscape guidance and control in addressing diverse style issues. Many guidance elements rely on overly abstract language, such as using “coordination” in building interface control and guidance without specifying how the interfaces should be coordinated, resulting in diminished control effectiveness. To enhance the scientific and practical determination of urban landscape guidance and control elements, this paper screens from three aspects: aligning with urban design principles, adhering to the national territory spatial planning regulations, and meeting the requirements of the market and public users.

2.2 Urban Landscape Guidance and Control Element System

The levels of urban landscape guidance and control correspond to the urban design compilation system, typically employing either a dichotomy or trichotomy approach. The dichotomy consists of two levels: overall and key areas, while the trichotomy involves three levels: overall, key areas, and plots. This paper adopts the trichotomy method (as shown in Table 1) to construct landscapes in the three levels, and conduct the guidance and control requirements layer by layer. First, it reshapes the urban landscape based on comprehensive design. Second, it supports the landscape quality with key areas, including business center areas, urban characteristic landscape and historical protection areas, waterfront areas, mountain front areas, important streets, and transportation hub areas. Third, it promotes the project implementation through plot design^[9]. From the perspective of implementation, this paper clarifies two types of guidance and control elements: control, which must be enforced, and guidance, which serves as a reference.

Table 1. Construction of the urban landscape guidance and control system (a three-level urban landscape compilation system: overall, key areas, and plots).

Guidance and control level	Main category of elements	Medium category of elements
Overall level	Cross-regional convergence	Cross-regional characteristic spatial structure, cross-regional characteristic area, and important open space
	Landscape orientation	Principles of function orientation, landscape zoning, and zoning control
	Traffic corridor	The pattern of the trunk road network, section composition of important landscape roads, and three-dimensional slow traffic system
	Natural landscape	Overall pattern of mountains, rivers, forests, fields, lakes, grasses, and water-green spatial system
	Landscape pattern	Landscape structure, important view corridor, and city interface
	Open space	Open space and public environment

Key area level	Control	Structural system	Landscape zoning, landmark node, image axis, and ecological corridor	
		Traffic corridor	Street and lane network pattern, landscape orientation of characteristic streets and lanes, section control, and three-dimensional slow traffic system	
		Architectural form	Withdrawal distance, building height limit, near-line rate, openness, and near-top rate	
		Urban landscape	Landmark viewpoint, view corridor, and sponge ecology	
		Open space	Open space system, node position, scale, and functional image orientation	
		Special control requirements	Natural landscape adjacent areas and historical and cultural protection areas	
	Guidance	Architectural form	Architectural style, roof and facade, architectural color, architectural material, volume, scale, and layout form	
		Open space	Slow traffic space, important traffic nodes, and square nodes	
Landscape elements		Cultural features, environmental sketches, night lighting, and municipal facilities		
Special guiding requirements		Natural landscape adjacent areas and historical and cultural protection areas		
Plot level	Control	Architectural form	Land boundary	Space boundary, entrance and exit design, and space connection
			Spatial contour	Spatial layout, tower location, main building height, building withdrawal and sticking lines, and building identification requirements
			Architectural style	
		Spatial organization	Transportation system	Public pedestrian corridors, pedestrian and street crossings, and traffic corridors
			Public space	Public space environment design, square, public green space, pedestrian street, waterfront space, and three-dimensional platform
			Night scene lighting	Lighting brightness and color temperature
	Guidance	Architectural landscape	Architectural style	Architectural color, architectural material, and facade and cornice
			Architectural space	Bottom function, grey space, and artistry of space
		Site environment	Urban furniture	Advertising signs, road signs, leisure facilities, and sanitation facilities
			Landscape environment	Plant disposition
Special level	Special region	Nature reserve		
		Coastal zone		
		Lake-riverside zone		
		Mountainous zone		

3 THE APPLICATION PRACTICE OF THE URBAN LANDSCAPE GUIDANCE AND CONTROL SYSTEM AT THE OVERALL, KEY AREA, AND PLOT LEVELS

With the design and implementation of the national territory spatial planning, it is urgent for all localities to compile relevant norms and standards as a statutory guidance basis to clarify the future development direction and characteristics. As an effective means of implementing urban planning, guiding architectural design, and shaping the urban characteristic landscape, urban landscape design is constantly updated with the times and plays a vital role in improving the quality of national territory spatial planning. However, there are many problems in the practice of urban landscape control planning in China, such as insufficient penetration into the legal system, poor operability, insufficient translation of landscape connotation, and insufficient connection with lower-level planning.

Therefore, this paper constructs a planning practice technical system comprising “macro-zoning guidance, meso-system control, and micro-design guidance.” This system, coupled with thorough investigations into legal frameworks and landscape cultures, aims to enhance the efficacy of guidance and control methods in actual project implementations.

3.1 Practice of Urban Landscape Guidance and Control System at the Overall Level: a Case Study of Dingzhou Urban Landscape Design

The macro-urban landscape design is matched with the city (county)-level territory spatial planning, providing technical support and optimized construction for the goals of the city (county)-level land and space overall planning and the bottom line guidance and control of the spatial structure level. The compilation of the urban landscape guidance and control system at the overall level emphasizes all elements of the whole region, integrates with the national territory spatial planning system, accurately applies urban landscape design according to local conditions, improves its public value-oriented role, and ranks it as a top-level means in the high-quality city development to balance the interests and values of all parties.

By studying the current situation of policies, nature, humanities, and architecture, the Dingzhou urban landscape design extracts characteristic landscape elements, then orients the urban landscape, and sorts out its overall structure, which is specifically reflected in the protection of historical and cultural cities, ecological landscape, urban spatial system, architectural landscape, night scene quantification, and zoning of key areas.

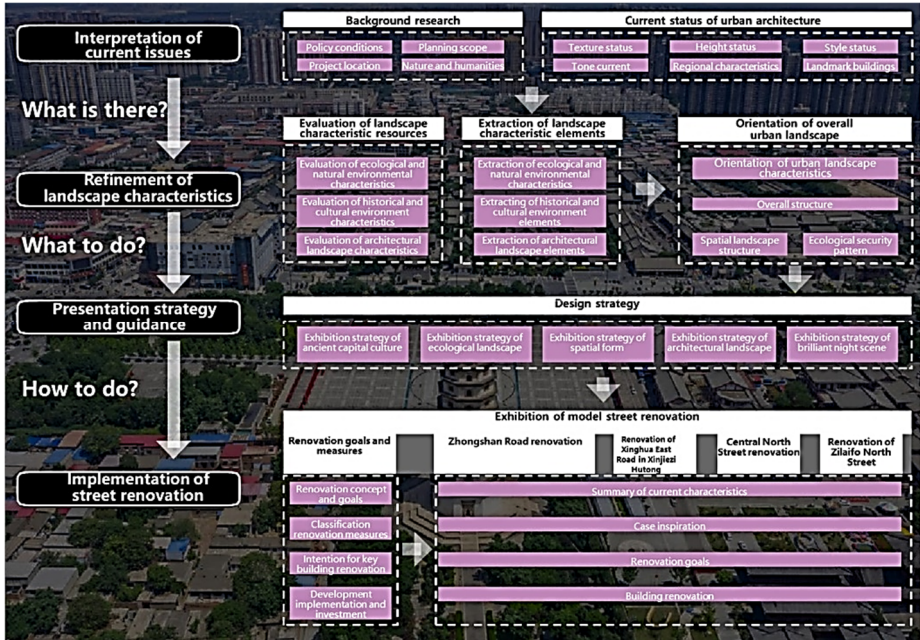


Fig. 1. Guidance and control content of the Dingzhou urban landscape design project (Self-drawn).

3.2 Practice of Urban Landscape Guidance and Control System at the Key Area Level: a Case Study of Enyang Architectural Facade Design Guidelines

The meso-level urban landscape design emphasizes the transmission and connection between the urban space and important guiding elements, such as the peripheral blue-green network, open space, and cultural corridors, and puts forward guiding and controlling requirements.

The Enyang architectural facade design guidelines of Bazhong adopt the method of “horizontal zoning-vertical classification” to study and summarize the area, which implements the strategy of hierarchical control and divides the control requirements of each element into strict, key, and general control levels according to the influence of the area on the city. Based on the dominant attribute of the area’s guiding and controlling influence on the architectural style, the superimposed zoning is delineated, and the control areas of each element are divided into cultural, functional, and environmental areas for control. In addition, the focus of the guidelines is shifted to architectural landscape elements, which are divided into three main categories of “plane-three-dimensional-built environment” and fifteen medium categories for control and guidance respectively. This aims to implement the policy of local urban scenic spots and play a technical role in management and control.

Table 2. Guidance and control content of classification elements of Enyang architectural facade design guidelines (Self-drawn)

Main category	Medium category	Minor category	Control content					
A Plane elements	Architectural texture	—	Texture type (point/line/surface)	Element proportion	Plane layout (group)	—	—	—
	Architectural interface	Podium interface	Near-line rate (advance and retreat layout)	The length and distance of continuous buildings (divided layout)	Proportion of street length	—	—	—
Main building interface								
B Three pile elements	Building height	Individual building height	Relative relationship between the architecture and environment (streets, squares, waters, and mountains)	Height combinations of different buildings (four boundaries and overall combinations)	The specific location of height changes	—	—	—
		Skyline						
	Building facade combination	Podium facade	Facade segmentation (divided into several segments)	Segmentation ratio	Virtual-to-real ratio	Segmented and virtual/real layout control	—	—
		Main facade						
	Building facade material	Exposed structural material	Material type (optional material)	Type proportion	Material layout	—	—	—
		Wall material						
		Door and window materials						
		Other component materials						
	Architectural facade color	Exposed structural colors	Color type (hue/brightness/chromaticity range control)	Type proportion	Color layout	—	—	—
		Wall color						
Color of doors and windows								
Other component colors								
Architectural facade form	Exposed structural form	Form type	Type proportion	—	—	—	—	
	Wall form							

		Form of doors and windows						
		Other component forms						
	Building foundation	—	Treatment form (platform/slope/suspended feet/ecology/other)	Form layout		—	—	—
	Fifth facade	—	Roof form (flat/sloping/terrace/ecological)	Combination ratio	Combination method (individual)	—	—	—
	Architectural lighting	—	Color temperature	Brightness	Lighting position	Lighting type (floodlight, contour light, internal transparency)	Lighting time period	—
	Architectural shop sign	Shop signboard	Shop sign location	Shop sign size	Shop sign color	Shop sign text	Shop sign materials	Control of changes in exclusive signs of chain brands
		Shop advertising	Is it allowed to set up billboards	Billboard location	Billboard size	Billboard color	Billboard text	Billboard material
C Building environmental elements	Plot transportation	Vehicle road	Entrance and exit location	—	—	—	—	—
		Slow road	Entrance and exit location	—	—	—	—	—
		Static traffi	Ground parking lot form	Warehouse form	—	—	—	—
	Green Square	—	Green square layout	Size of the green square			—	—
	Walls and gates	—	Is it allowed to set up walls	Wall type	Wall design	Wall material	—	—
	Urban furniture	—	Furniture type	Home styling	Furniture material	—	—	—

3.3 Practice of Urban Landscape Guidance and Control System at the Plot Level: a Case Study of Compilation of Comprehensive Renovation and Enhancements in Kanmen Science and Technology Park

The micro-level urban landscape design is matched with the chronic system of streets and alleys and the architectural landscape, aiming to strengthen the guidance and control of the street and the space in front of the building. The architectural landscape employs “general-sub” hierarchical guidance and control and classifies the overall buildings, structures, and walls. Therefore, guidance and control requirements are proposed. Key and historical buildings are used as models to clarify the detailed rules and conditions for implementation.

The compilation of comprehensive renovation and enhancements in Kanmen Science and Technology Park in Zhejiang combines the policy requirements of “five upgrades and one enhancement” to control and guide the four major elements of the plot: fences, walls, buildings, and architectural environments. The architectural environment is controlled according to the building front area and public green space to clarify plant configuration, urban home, and chronic system guidance and control. At the architectural level, the current buildings in the park are comprehensively studied and judged from the aspects of facade beauty, importance, renovation difficulty, aging degree, and development sequence, and the buildings are divided into the key improvement category, renovation category, facade repair category, and detailed optimization category under a strategy of classification and hierarchical control. The guidelines should clarify the design elements of the plot building, implement control according to the facade, composition, ground floor, entrance, material, color, roof style, shop sign, and lighting effect, and list the positive and negative aspects of architectural landscape guidance and control. For key upgrading buildings, the renovation implementation plan should be clarified, and detailed guidance and control rules should be added to ensure the effectiveness and leadership of the guidelines. As for fences, guidance in landscape transformation, lighting of lamps, and fence renovation should be clarified according to the fence style and function.

Table 3. Control content of building classification elements for the compilation of comprehensive renovation and enhancements in Kanmen Science and Technology Park (Self-drawn).

guidance and control element	Control content	
Facade and composition	Goal	Adding or subtracting components to create a rhythmic facade and strengthen the concave-convex hierarchy
	Rhythm	Multi-story buildings strengthen horizontal lines for extended perception. Low-rise buildings can organize the order of the facade through the interweaving of horizontal and vertical lines, and reshape the aesthetic harmony through flat composition techniques. Introducing wedge-shaped decorations rhythmically enhances visual flow.
	Virtual-real relationship	It is necessary to maintain the virtual-real proportion of the original building and adjust the proportion appropriately in public areas to create a suitable contrast between virtual and real.

	Concave-convex hierarchy	It is necessary to adjust the relationship between concave and convex elevations to enrich the elevation levels and changes in lighting and shadow.
	Decoration details	By enhancing the roof thickness, facade frame, air conditioning grille, and decorative moldings, and removing illegal window sills and excess structures, the facade form is simplified and the facade details are enriched.
Bottom floor and entrance	Goal	Coordination between the ground floor and facade to ensure recognizability at the entrance
	Entrance identification	Ground floor elevation signage should be uniform in size, while floor merchants within the same building can employ diverse design styles using similar materials and colors.
	Entrance public	The main entrances and exits on the building ground floor should reserve a certain amount of public space, such as small squares and amusement parks, to ensure the gathering and distribution needs of the crowd.
	Entrance landscape	The main entrances and exits on the building ground floor should be designed with a reasonable landscape. By arranging green plants and lawns, the identification of the entrances and exits should be ensured, while ensuring a comfortable entry and exit experience for the crowd.
Material and color	Goal	The building materials/colors are in harmony with the features of the area.
	Color recommendations	A single building should not contain more than five colors, following the golden matching rule of “60-30-10” architectural colors: 60% dominant color, 30% auxiliary color, and 10% embellishment color. The decorative wedge should blend orange and dark gray, avoiding the repetition of the same color three times in a row.
	Prohibited colors	It is not advised to use cool colors on a large scale, as they may conflict with the architectural landscape.
	Material recommendations	The selection of materials should respect local cultural characteristics, favoring materials with regional characteristics. New buildings and key renovated buildings are encouraged to use new technologies and materials to improve building quality.
	Prohibited materials	The external facade materials of a single building should not exceed four types, and the use of facade materials that are prone to light pollution is prohibited.
Roof style	Goal	Fifth facade design coordination for equipment room shading
	Roof style	For current sloping roof buildings, it is recommended to retain the roof form, while other buildings in the area should focus on flat roofs to ensure consistency in the roof form. Mixed styles can also be used, including the ecological form and flat-slope form. Among them, commercial and industrial buildings are encouraged to use ecological roofs to increase urban green space.
	Equipment room shading	Covering the roof equipment room through perforated metal plates, grilles, and other forms to coordinate the composition of the facade.
Shop signs and lighting effects	Goal	Unify the organization of advertisements for retail stores along the street to avoid damaging the architectural style.
	Form and colors	It is recommended to use exterior wall advertising as the dominant form. Shop signs and advertisements are prohibited from using colors that do not match the building facade.

	Size	The width of outdoor signs should be consistent with the width of the entrance and exit of commercial units.
	Location	Generally, shop signs should be set below the second-floor slab and above the bottom lintel. Advertisements shall not exceed the range of the attached building facade, and parallel exterior wall advertisements shall not be placed on non podium parts (or parts over 18 meters) of high-rise buildings.

4 INNOVATION AND CONCLUSIONS

Because the urban landscape is centered on the urban material space environment, it involves nature, society, economy, culture, art, and other aspects, rendering it complex^[10]. This paper delves into the selection and classification of the elements of urban landscape guidance and control, refining its content comprehensively across the three spatial scales of macro, meso, and micro at the overall, key area, and plot levels. Meanwhile, on the corresponding spatial scale, the urban landscape guidance and control system is applied through specific projects, and an all-round guidance and control system from guidance to specific implementation is constructed, which provides more diverse possibilities for shaping the unique urban landscape and has a certain degree of innovation. Due to the multi-faceted perspective of urban landscape research, follow-up research can conduct in-depth research and expand the setting and scope of quantitative evaluation standards for the effect of urban landscape guidance and control to effectively reflect and feedback the effect of urban landscape guidance and control.

REFERENCES

1. Cui S. D., Alatai. Research on County Characteristics and Charm Creation from the Perspective of Land Spatial Planning--Taking Bama Yao Autonomous County, Guangxi as an Example . *Small Town Construction*, 2020, 38 (06): 58-66.
2. Zhou Q. H., Yang X. D. Thoughts on Urban and Rural Planning Education for Land and Space Planning . *Planner*, 2020, 36 (07): 27-32.
3. Sun Z. Y., Cai X. Y., Qin C. Urban Design Response from the Perspective of Land and Space Planning--Taking the Urban Design Pilot Project of Rizhao City, Shandong Province as an Example . *Planner*, 2020, 36 (21): 45-50.
4. Han X. S. Transportation Planning Reform and Practice under the Background of Land Spatial Planning . *Western Journal of Human Settlement Environment*, 2020, 35 (01): 31-36. DOI: 10.13791/j.cnki.hsfwest.20200105.
5. Zhang Y. L., Ma J., Li X. Exploration of Urban and Rural Green Space System Planning and Management Path for Land Space Planning in the New Era . *Landscape Architecture*, 2020, 27 (01): 25-29. DOI: 10.14085/J.fjyl.2020. 01.0025. 05.
6. Shen L., Zhang W. Management and control of urban style-Tianjin urban style planning practice [C]//China Urban Science Research Association, Jiangsu Provincial Department of Housing and Urban-Rural Development, Suzhou Municipal People's Government. 2018 Urban Development and Planning Proceedings. School of Architecture, Tianjin University; Tianjin Municipal Planning Bureau, 2018: 7.

7. Zhou L., Sun Q., Yu L. L., et al. Thoughts on Urban Design Technology Reform under the Background of Unified Land and Space Use Control . Journal of Urban Planning, 2021, (03): 90-97. DOI: 10.16361/j.upf.202103013.
8. Zhang L. Reflections on the Construction of Shanghai Urban Design Technology System from the Perspective of Land and Space Planning . Planner, 2022, 38 (12): 94-99.
9. Ma X. F. Research on Urban Landscape Planning from the Perspective of Land Spatial Planning . Future Urban Design and Operation, 2022, (11): 21-23.
10. Huang Q. Research on the Framework of Urban Overall Style Planning--Taking Zhuzhou City as an Example [D]. Tsinghua University, 2014.

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