

Huaihua Railway Transportation Court: Architectural Design Practice of Railway Justice Buildings in Complex Transportation Infrastructure Environments

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Abstract: Huaihua Railway Transport Court is located at the interchange node between the Hunan-Guizhou Railway and urban arterial roads. The site is constrained by multiple factors including elevation differences, noise, vibration, and limited visual field. Centered on the trial procedure requirements of railway judicial architecture, the project adopts strategies such as stream separation, platform integration, courtyard organization, and environmental responsiveness to explore the spatial generation logic of buildings in a complex transportation infrastructure environment. While meeting the requirements of judicial safety, order and efficiency, the project reconstructs the relationship between the building and the railway-urban context, forming a judicial architectural practice that integrates institutional expression, place spirit and urban interface value.

Key words: judicial architecture; steep platform; circulation organization; place spirit; urban interface

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1 Origin of the Project: When Railway Reform Meets Urban Memory

Huaihua in Hunan Province was established as a city through railway development and flourished as a transportation hub. As a

city brought by railways, it has transformed over five decades from the remote town of Yushuwan into a central city serving five neighboring provinces. Huaihua's spatial layout, organizational structure, and population dynamics have been profoundly shaped by the railway system over the long term. The Huaihua Railway Transport Court emerged and evolved within this specific historical context, serving not only as a vital component of the railway judicial system but also as a testament to local urbanization processes and transformations

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in railway governance. In accordance with the central government's reforms to the railway public security, procuratorial, and judicial management systems, following the 2012 institutional restructuring of the Ministry of Railways, the Huaihua Railway Transport Court was fully transferred to the Hunan Provincial Political and Legal Affairs Commission and the Hunan Provincial High People's Court, operating under local administration while initiating relocation and reconstruction efforts. This relocation not only marked an update in institutional facilities but also represented a spatial reconfiguration of judicial buildings under the new management framework.



Figure 1: Huaihua Railway Transport Court

2 Project Site and Project Overview

The base is located northeast of the Hutian Avenue interchange at the junction of the Xiang-Qian Railway and the city's north-south arterial road. To the north lies the Huaihua Railway Transport Procuratorate, which was planned and constructed concurrently; to the east is a residential area under construction. To the west, it

faces a steep 18-meter-high terrace along Hutian Avenue, while to the south it borders the Xiang-Qian Railway through a protective forest belt. Situated at the convergence of the railway corridor, the urban rapid transit system, and the newly developed urban area, the site exhibits distinct characteristics of being at the periphery of infrastructure networks and holds a pivotal urban positioning.

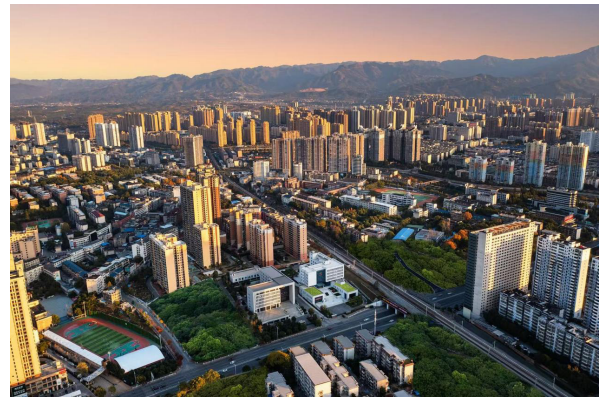


Figure 2: Panorama

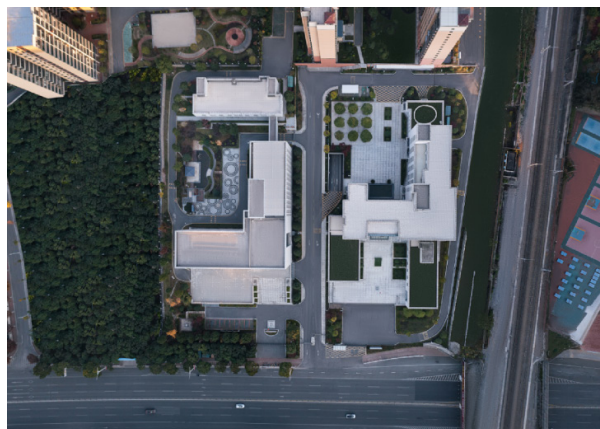


Figure 3: Aerial view

The site's most distinctive feature lies in its complex vertical elevation differences and compressed spatial relationships. The Xiang-Qian Railway crossing horizontally on the southern side, combined with the overpass, creates visual

obstructions, resulting in a constrained and confined appearance of the site within the urban landscape and visual field. Meanwhile, the noise, vibrations, and psychological pressure generated by railway operations directly challenge the solemn order, tranquil environment, and clear recognizability required for judicial buildings. For such judicial structures situated within the gaps of high-density transportation infrastructure, the design challenge lies in reconstructing the relationships between the building and its site, as well as between the institution and its environment, through overall layout, vertical integration, circulation organization, and interface control.

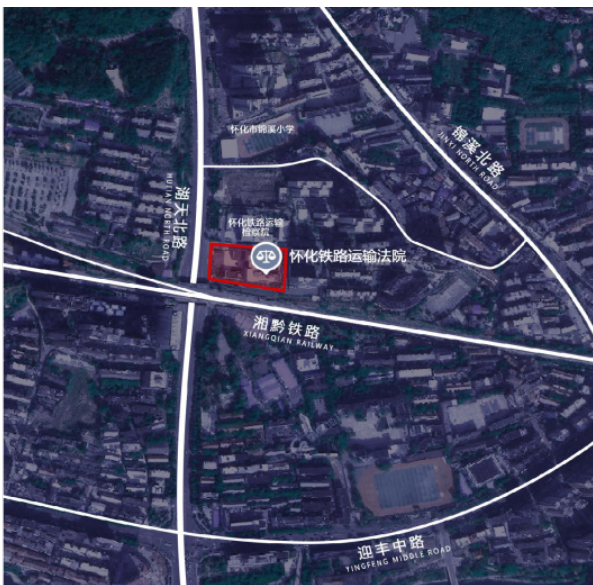


Figure 4: Project location map

This project was constructed to meet the standards of a Class II trial court, with a total floor area of approximately 9,000 square meters. Given its modest scale and constrained site conditions, the key

challenge in its design lies in mitigating environmental pressures within this specific spatial context while achieving a distinctive visual identity.

3. A functional layout dominated by the trial and case-handling workflow

The typological characteristics of court buildings are primarily manifested in their procedural organization of functions. Unlike conventional administrative office buildings, court buildings essentially serve as spatial embodiments of judicial procedures, trial processes, and security requirements. Through clear circulation zoning, zoned management, and hierarchical organization, they ensure the independence, transparency, security, fairness, and efficiency of judicial proceedings.

The project primarily consists of a trial court area, a case filing and petition area, a trial operations office area, and a logistics support area. The design establishes the movement routes of various stakeholders—including public personnel, parties involved, judges, and detainees—as the foundation for its horizontal and vertical organization. The complex features a main entrance plaza facing Hutian Avenue and an inner courtyard adjacent to the residential area to the east, connected by a circular pathway encircling the buildings. This layout creates distinct entrances for the public, parties involved, office staff, and judicial personnel within each functional zone. By implementing

separate entrances and traffic flow diversion systems, the design minimizes cross-interference among different groups, ensuring safe judicial proceedings.

The detention area for the criminal trial section is located in a relatively independent underground level with convenient security controls, connected to the trial zone via dedicated vertical circulation routes, forming a complete, enclosed, and controllable escort corridor. The separation of detention and trial functions prevents overlap with public and administrative circulation paths. Within the courtroom, distinct circulation zones are established for judges, litigation participants, and audience members in accordance with trial protocols, ensuring spatial organization aligns with judicial procedures and implementing the requirements for transparency, security, confidentiality, and order at the architectural level.

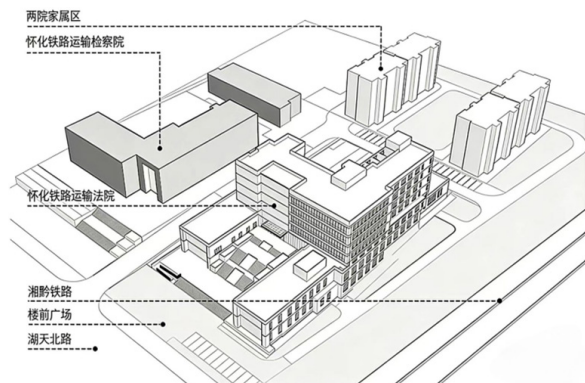


Figure 5 Spatial Simulation Analysis: The facility adopts an integrated urban spatial design with the adjacent Huaihua Railway Transport Procuratorate, unified within a modern, minimalist, and homogeneous architectural context.

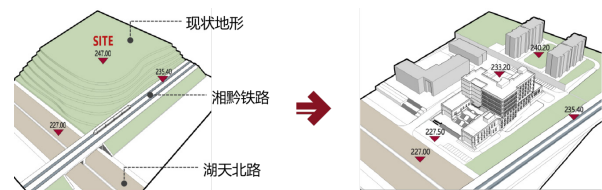


Figure 6 Site Evolution: Leveraging the existing topographic elevation differences, a terraced layout was adopted to create a spatial configuration featuring staggered heights and a combination of inner courtyards and outer gardens, resulting in a spatial sequence with depth and layered dimensions.

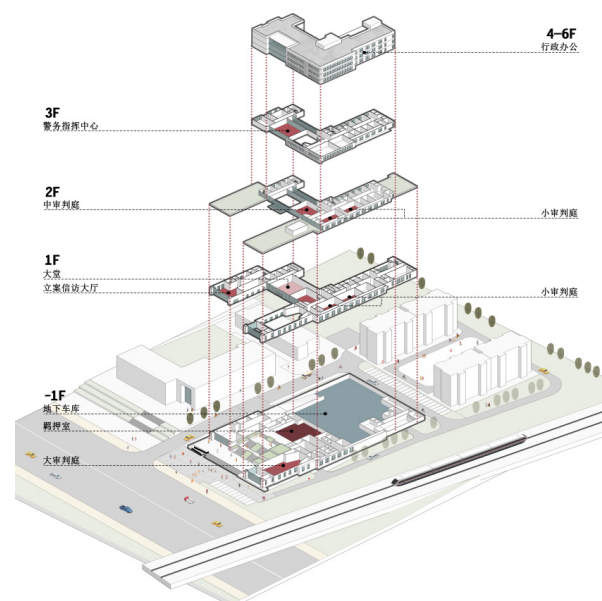


Figure 7 Design Path: Composite Three-Dimensional Space – Integrating horizontal layouts with vertical circulation systems to physically isolate different functional zones and occupants, ensuring safety, convenience, and efficiency.

4 Architectural Design Integrated into the Landscape

The site features steep slopes, significant elevation differences, constrained interfaces, and is subject to railway encroachment and noise disturbances. Consequently, the overall layout is premised on vertical integration of the site, employing terraced arrangements, courtyard organization, and strategic combinations and displacements of

architectural volumes to create a cohesive spatial configuration that harmonizes with the topography while maintaining a sense of order.

The building faces west, oriented toward Hutian Avenue, and adopts an “H”-shaped layout. Centered around the main entrance lobby, the petition reception hall and the grand courtroom are positioned on either side of the main structure, forming two interconnected courtyards that create a clear distinction between dynamic and static zones. Facing the main entrance plaza, the building establishes a well-defined terraced spatial sequence through its enclosed design and the ascending staircase running from west to east, guiding visitors from the bustling surroundings of the Xiang-Qian Railway and urban roads into the tranquil judicial space. This pathway serves not only as a functional navigation system but also as a psychological transition, enabling visitors to smoothly shift from urban daily life to the judicial environment as they ascend through the gradually converging spaces. The terraced layout elevates the building’s dominant elevation and integrates seamlessly with the site’s landscape through strategic vertical gradations, ensuring visible prominence and central positioning despite the complex environment of overpasses, railways, and retaining walls. This design effectively mitigates environmental constraints while organizing the spatial order of the site. By

avoiding direct pressure from the railway along the perimeter, it creates a deeper frontage space that redefines the mutual relationship between the building and the railway as complementary elements, fostering a new dynamic of continuity and dialogue. The unique and complex terrain is not merely an obstacle in this project; rather, it serves as a vital medium for shaping the architectural character and spatial composition.



Figure 8: Lobby Entrance



Figure 9: Lobby

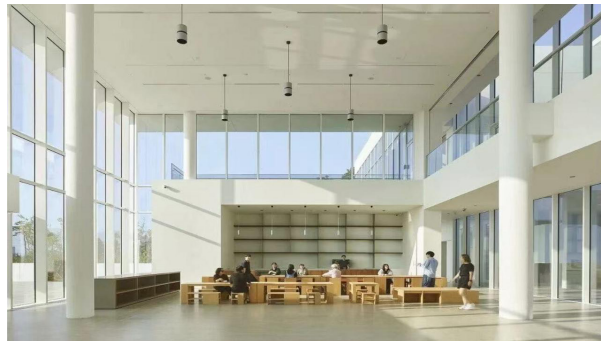


Figure 10: Petition Reception Hall

5 Architectural Components of Environmental Response

The building faces west and is situated south of the Xiang-Qian Railway, with exposure to western sunlight, railway vibrations, and noise creating a unique natural environment for the site. The design prioritizes climate adaptability and environmental control, employing targeted approaches to the architectural layout, functional zoning, and maintenance interfaces to establish a logical architectural composition aligned with site conditions. The main structure features an “H”-shaped plan, with primary office spaces arranged along the north-south wings for optimal natural lighting and ventilation. The small courtroom and related functional areas adjacent to the railway utilize dual corridors as buffer zones, ensuring separation between judges ‘and parties’ pathways while effectively shielding against railway noise and minimizing its impact on judicial proceedings. Facing the West Lake Avenue across the north-south wings, the main building houses auxiliary facilities and public service spaces. Its composite facade combines solid walls, sunshade grilles, and glass curtain walls to address western exposure challenges and enhance urban aesthetics. The architectural facade employs a minimalist geometric composition that emphasizes spatial hierarchy through contrast between solid and void elements and proportional balance. The solid sections convey the

stability and solidity expected of judicial architecture, while the glass curtain walls introduce openness and contemporary appeal, and the grilles serve dual functions of shading, filtration, and detail control. The main facade featuring the national emblem serves as the visual focal point, establishing clear identity within the urban landscape and defining the building’s dimensional hierarchy and compositional order—a testament to its restrained yet powerful public image.



Figure 11: Interior of the Great Trial Chamber



Figure 12: Exterior view of the Grand Court



Figure 13: Main Entrance Plaza



Figure 14: Building detail

6. Expression of the venue rooted in the spirit of the rule of law

The design philosophy of this project returns to the essence of judicial architecture, discarding all prior experience and focusing intently on the site and terrain of the building. It seeks to comprehend the meaning conveyed by the building's function and context, fostering dialogue with nature, the environment, and human culture to capture the most authentic experiences. Starting from the site conditions, judicial procedures, and spatial organization, the project aims to establish an expression approach with greater internal coherence.

The building is constructed with a tiered design, abandoning symmetrical central axis planning and avoiding the conventional approach of simplistically equating the court's image with symbolic solemnity and majesty. Guided by the grand staircase at the main entrance, the structure unfolds layer by layer within its enclosed layout, with its various volumes interweaving, complementing, and echoing each other in a spiral ascent that transcends the constraints imposed by urban interchange systems. Simultaneously, it organically integrates all site resources into a unified, stable, and orderly spatial atmosphere. The overall architecture exudes both tension and serenity, radiating strong appeal. Its dignified, confident, and logically coherent spatial sequence underscores the court's role as a leader in promoting fairness, justice, and transparency within social civilization and institutions, guiding the conduct and value orientations of all stakeholders and the public. Through the contextualization of this institutional space, the spirit of the rule of law becomes perceptible, actionable, and comprehensible.

The architecture integrates seamlessly with its specific site, employing refined and minimalist three-dimensional geometric forms. Within its restrained size, it skillfully combines elements such as movement,

light and shadow, and the interplay of reality and illusion to create a stable and expansive architectural interface. Balancing dynamism with discipline, it fosters a distinctive environment for law enforcement and case handling—one that embodies both the solemn, inviolable sanctity of judicial architecture and the practical, context-specific character of railway courts. Moreover, the design is imbued with humanistic consideration, endowing it with strong recognizability.

7 Urban Integration from Individual Units to Legalized Neighborhoods

The Railway Court and the Railway Procuratorate are adjacent to each other, sharing close functional ties and being planned and constructed concurrently. Together, they serve the dual purpose of showcasing the city’s legal image and providing public services within the urban landscape. While emphasizing their distinct identities, the project maintains consistency in spatial scale, compositional logic, construction methods, and interface design, collaboratively creating an integrated legal public space. This endows the site, previously divided by railway tracks and overpasses, with new urban public attributes. The legal square developed from individual buildings not only enhances the overall image of the judicial system but also serves as a new cultural landmark for

Huaihua, a railway-oriented city. Beyond its purely architectural function, the project achieves a comprehensive transformation and revitalization of the urban district’s image and public space quality.



Figure 15: Platform

8 Conclusion

The design practice of the Huaihua Railway Transport Court project demonstrates that in complex transportation infrastructure environments, the establishment of judicial architecture depends not on symbolic formal expressions, but on the ability to derive a clear and comprehensive design approach from site conditions, institutional logic, and environmental constraints. Centered on the trial workflow, leveraging site integration as a key driver, and grounded in environmental responsiveness, the project successfully achieved a spatial solution for this specialized railway court building despite its limited scale and challenging foundation. Architectural order and site character through overall layout, vertical design, functional organization,

and interface control. The result is a judicial building that not only meets the professional requirements for court operations but also establishes a distinctive, locally rooted, and publicly accessible identity within the context of railway cities.



Figure 16: The court in the night



Figure 19: Overview of the court



Figure 20: The court under the morning sun



Figure 17: Architecture as Seen from the Xiang-Qian Railway



Figure 21 Panorama



Figure 18: The building viewed from Hutian North Road

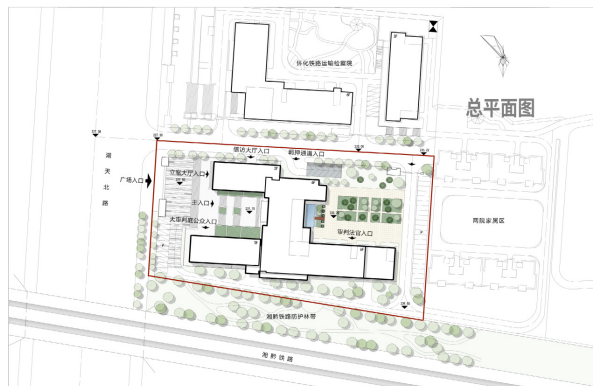


Figure 22: General Layout Diagram

design drawing



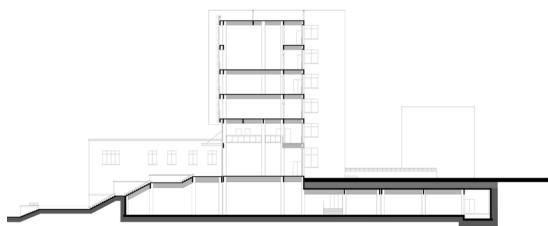
One-level floor plan



Second-floor floor plan



Three-story floor plan



1-1 Section View

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