



Xiangyang Sen De Run Su Ling Ting Residence



2024

ABOUT THIS PROJECT:

Market Segment:
General Construction

Location:
Xiangyang, China

Products Used:
Xypex Admix C-1000NF
Xypex Concentrate

The Xiangyang Sen De Run Su Ling Ting Residence Project is located in the core development zone of Dongjin New District, Xiangyang City, Hubei Province. It is the first high-end residential benchmark project in the region developed under the concept of a "Fourth-Generation Residence."

The total construction area is approximately 280,000 m², covering high-rise residential buildings, sky gardens, ecological courtyards, vertical greening systems, and smart community facilities. The project aims to create a "home within the urban forest," achieving an ecological living model where every unit has its own garden and every level features greenery.

As a representative of fourth-generation housing, the project breaks away from traditional two-dimensional residential layouts and adopts a "vertical greening + sky courtyard + flexible space" design concept. Each unit is equipped with a private rooftop garden or terrace courtyard of varying sizes, extending greenery upward and forming a multi-level vertical ecosystem.



The design emphasizes the integration of architecture and nature, incorporating high-performance building envelopes, rainwater recycling systems, solar energy utilization, and intelligent management systems to embody the principles of green and low-carbon development.

However, this innovative design also introduced unprecedented waterproofing challenges:

Difficult maintenance. The sky gardens are located about 6 m above ground; any leakage would be extremely difficult to repair later, with significant safety risks during high-altitude work. Therefore, the waterproofing system must be highly reliable, achieving "one-time waterproofing for a lifetime of protection."

Poor substrate conditions. The sky gardens require substantial backfilling of planting soil, causing heavy mud and debris accumulation on the basement roof slab. Compared with conventional third-generation buildings, the cleaning workload of the base surface increased significantly, making it difficult for traditional waterproof membranes - highly dependent on substrate preparation - to meet quality standards.

Tight schedule and limited workspace. The construction site had very limited storage and working space, and the schedule was tight. Traditional multi-layer waterproofing systems could not meet the progress requirements. In addition, strict environmental regulations prohibited the use of toxic or hazardous substances, as the project was positioned as a healthy and livable community.

Optimized Technical Solution

After multiple rounds of technical evaluation, the project team decided to abandon the conventional “membrane-dominant external waterproofing” system for critical areas such as the basement roof slab, sky gardens, and post-cast joints, and to adopt a composite waterproofing system consisting of: Structural self-waterproofing concrete as the core, Cementitious crystalline waterproofing materials (XYPEX) as the enhancement, and Flexible waterproofing layers as supplementary protection.

The core material selected was the XYPEX crystalline waterproofing series. Through its crystalline reaction mechanism, XYPEX enhances the self waterproofing capability of the concrete substrate from within. In addition, the wet applied root-resistant membrane acted as both a physical barrier layer and a mechanical protection layer against damage from backfilling and vehicle traffic. The cement slurry used in the wet-application process also provided continuous moisture curing for the XYPEX coating, promoting full hydration and improving waterproofing performance.

For post-cast joints and secondary casting areas, XYPEX Admix was added directly into the ready-mixed concrete at the specified dosage, improving the overall impermeability of the interface between new and old concrete.



Construction procedures

Sky garden and roof slab areas: Surface preparation (thorough cleaning, removal of laitance, no standing water) - preparation of XYPEX waterproofing slurry - spray two uniform coats using dedicated equipment - proper water curing - wet-apply root-resistant waterproof membrane. Post-cast joints and secondary casting areas: Add XYPEX Admix into the concrete mix at the designed dosage, mix thoroughly in the truck, and pour directly.



Application Performance

The earliest completed sky garden section has been in service for nearly one year, undergoing seasonal temperature changes, extreme heat, and heavy rainfall. No leakage has been observed at any critical junctions. All secondary-poured concrete joints, including basement wall cold joints, post-cast zones, and tower-crane bases, also remained dry and watertight after a full year of rain exposure and structural settlement, demonstrating stable and reliable waterproofing performance.

Meanwhile, the sky gardens of the Su Ling Ting Residence now present a lush, evergreen ecological landscape. Each floor features private courtyards and shared green terraces planted with succulents, shade-tolerant plants, and low shrubs, forming a three-dimensional vertical greening system.

Notably, despite prolonged exposure to rain, sunlight, and potential root penetration, the waterproofing layer showed no blistering, cracking, or failure, maintaining excellent structural integrity and durability.

In contrast, nearby projects built during the same period using traditional external waterproofing systems experienced recurrent leakage and required repeated repairs. By optimizing its waterproofing design with XYPEX crystalline technology, this project successfully avoided rework, delays, and operational interruptions caused by leakage issues, earning high recognition from the project owner.

Practice has proven the effectiveness and cost efficiency of XYPEX materials in resolving long-term leakage problems in buildings. This successful case demonstrates XYPEX's superior performance under complex conditions and provides a valuable technical reference for achieving the dual goals of ecological sustainability and structural durability in high-density urban residential developments.



Conclusion

Water leakage remains one of the key obstacles limiting the quality of “good housing.” As a representative cementitious crystalline waterproofing material, XYPEX, with its chemical crystallization mechanism that coexists and grows with the concrete, outstanding durability, and unique self-healing capability, perfectly aligns with the century-long quality vision of high-performance housing.

Looking forward, under the guidance of policies from the Ministry of Housing and Urban-Rural Development, further efforts should be made to:

Strengthen standard development – Promote and encourage high-performance, long service-life waterproofing materials and systems within national and industry standards to provide institutional support for new technologies.

Enhance industry collaboration – Break down barriers between design, construction, and material manufacturing; encourage integrated design approaches that prioritize structural self-waterproofing and crystalline technologies at the design stage.

Focus on talent training – Provide systematic training for field engineers and workers on new materials and construction methods to ensure proper and efficient application of advanced waterproofing technologies in practice.

By systematically summarizing and promoting innovations represented by XYPEX crystalline technology, China can effectively enhance its overall waterproofing standards and deliver more durable, watertight, and comfortable high-quality residences, fulfilling people's aspiration for a better living environment.