Rooftop Greening Systems: Structural Viability Checklist (Detailed Edition)
— A Technical Self-Audit to Avoid Failure—

This document is not intended to rank or determine the superiority of rooftop greening systems or products. It is a technical self-audit tool designed to organize and examine conditions that are likely to cause problems to surface several years later, from the perspectives of system design, structure, and underlying assumptions. Its purpose is not to help you choose a "correct" answer, but to identify assumptions that cannot yet be clearly explained or justified.

[R1] Extreme Heat, Drought, and Irrigation Failure Risk — What This Risk Check Focuses On
Where and how the impact spreads when irrigation stops

☐ Have you considered where the impact would begin and how far it would spread if irrigation were to stop for several days to several weeks?

☐ Can you explain this not by saying "the plants are hardy," but through structural mitigating factors such as water retention, layout, and evaporation control?

☐ Are you avoiding assumptions that the system's viability depends on irrigation continuing to function normally at all times?

[R2] Heavy Rainfall, Drainage, and Substrate Washout Risk — What This Risk Check Focuses On
Can you explain how water and soil move during heavy rainfall?

☐ Can you explain where water enters, how it flows through the system, and where it exits during heavy rainfall?

☐ Have you anticipated where water would accumulate and which areas would be affected first if drainage outlets were temporarily blocked?

☐ Do you structurally understand the phenomena that are likely to occur during water stagnation
(such as root rot, substrate washout, and increased load)

[R3] Wind Damage and Edge Failure Risk — What This Risk Check Focuses On
Are you planning with the assumption that failure begins at the edges?

☐ Do you understand why perimeter areas, upstands, and level changes are more likely to be affected earlier than central areas?

☐ Can you explain which elements provide resistance to wind—such as self-weight, flexible structure, fixation, or interconnection—and how they function?

☐ Have you considered whether a partial uplift could trigger cascading damage by affecting surrounding areas?

[R4] Dependence on Maintenance — What This Risk Check Focuses On
Can the system remain viable even if maintenance does not proceed exactly as planned?

☐ Are you avoiding making frequent or highly specialized maintenance an implicit condition for the system to function properly?

☐ Is the system structured so that even if maintenance is temporarily delayed, it is unlikely to lead to immediate or critical deterioration?

☐ Are you avoiding relying on maintenance contracts or inspection regimes as substitutes for the inherent robustness of the system itself?

[R5] Propagation Risk from Localized Failures — What This Risk Check Focuses On
Could a localized failure lead to a collapse of the entire system?

☐ Is the system structured so that localized issues—such as plant dieback, drainage problems, or substrate failure—are unlikely to spread rapidly across the entire area, even if they occur in one part?

☐ If a localized failure occurs, is it possible to repair or renew only that specific area?

☐ Is the system designed in such a way that a single localized issue would not force the removal of the entire installation?

[R6] Construction-Phase Risk (Construction Dependency Risk) — What This Risk Check Focuses On
Is the system likely to remain viable regardless of who performs the installation?

☐ Is the system designed so that differences in installer skill are unlikely to result in significant differences in overall viability?

☐ Does the system avoid implicitly relying on specialized construction procedures or a high level of craftsmanship?

☐ Is the system configured so that variations in construction quality are unlikely to directly compromise long-term viability?

[R7] Weed Proliferation Risk (Maintenance Breakdown Risk) — What This Risk Check Focuses On
Is the system designed to remain viable on the assumption that weeds will inevitably appear?

☐ Is the system designed without assuming that weed intrusion can be completely prevented?

☐ Is the system structured so that, even if weeds appear, their removal does not require excessive labor or effort?

☐ Is the layer composition designed so that weed overgrowth is unlikely to directly lead to a breakdown in maintenance?

[R8] Aging, Renewal, and Adaptability (Compatibility with Waterproofing Renovation) — What This Risk Check Focuses On
Can the system withstand the building's lifecycle?

☐ During waterproofing renovation, is partial removal, phased removal, and reinstallation possible?

☐ Is the greening system not excessively integrated with the waterproofing layer?

☐ Have you anticipated the workload and removal logistics required during renovation or dismantling in advance?

[R9] Long-Term Viability (Coverage Rate and Stability) — What This Risk Check Focuses On
Can you explain what the condition will be like several years later?

☐ Are you envisioning the condition several years after installation, rather than focusing only on the immediate post-construction state?

☐ Can you explain—based on the system's structure and environmental conditions—why the coverage rate will be maintained or how it will change over time?

☐ Have you defined the conditions for viability without relying solely on numerical guarantees?

[R10] Separating Warranties and Inspections — What This Risk Check Focuses On
Are you conflating a sense of reassurance with actual structural viability?

☐ Are you avoiding treating "having a warranty" or "including inspections" as reasons why the system itself is structurally viable?

☐ Can you explain why the system is structurally likely to remain viable even without warranties or inspections?

☐ Are you able to explain the system's viability based on its structure and plant characteristics, rather than relying on operational or maintenance assumptions?

[Final Self-Audit] Overall Review

☐ Across R1–R10, can you explain the conditions for viability in a consistent and coherent manner?

☐ Are you avoiding explanations that rely on statements such as "it will be fine as long as it is maintained" or "it is safe because there is a warranty"?

☐ Are you able to carry forward any points you cannot yet explain into the next stage of review (such as clarifying conditions or conducting a more detailed audit)?

Summary

This checklist is not intended to make you choose a rooftop greening system.

So that you don't choose without thinking.
This is a structural guide to help you think through your decision and judge deliberately.

※ This material does not recommend or endorse any specific product or system.
※ A detailed evaluation requires case-by-case verification that takes into account environmental conditions, structural design, maintenance, and renewability.

The detailed rationale and background are explained on the website to the right: https://okujou-ryokka-shippai.jp/