# 【Appendix 5】 Green Building Certification Criteria for Residential Buildings

| sector | category | classification number | Integration Criteria | Detailed Evaluation Criteria | points |
|---|---|---|---|---|---|
| 1. Land Use and Transportation | 1-1. Changes in land use and land quality | 111 | R2-2 Ecological Value of Existing Land | Land area with low ecological value | 2 |
| | | 112 | R2-1 Establishment of a systematic upper level plan | urban design . Whether to establish a detailed plan, whether to establish a district unit plan, whether to establish a plan considering harmony with other surroundings | 2 |
| | | 113 | R2-5 Floor Area Ratio | Planned floor area ratio evaluation Y=(-X+220)/10 | 6 |
| | 1-2 Adjacent land effect | 121 | L4-1 Feasibility of measures to prevent interference with the right of sunlight to adjacent land | The maximum elevation angle measured by the height of each part of the building subject to examination from the site boundary line adjacent to the ground | 2 |
| | 1-3 Transportation | 131 | T1-1 Proximity to public transportation | Walking distance to public transportation facilities (railway station, subway station, bus terminal, bus stop) | 2 |
| | | 132 | T1-2 Distance between city center, regional center and complex center | Evaluation according to the straight-line distance between the city center and regional center and the center of the complex | 2 |
| | | 133 | T1-3 Whether bicycle storage and bicycle roads are installed in the complex | The extent to which bicycle storage areas are installed for a certain percentage of the number of households and bicycle-only roads are connected to the inside and outside of the complex | 2 |
| | 1-4 Creation of living environment | 141 | Whether or not a pedestrian-only road was created within the T2-1 complex | Assessment of the status of pedestrian-only roads | 3 |

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| | | 142 | C2-2 External Pedestrian Road Network Connection | Degree of connection between pedestrian-only roads and the outside world | 1 |
| | | 143 | C4-1 Accessibility to rivers and forests around the complex | Assessment of proximity and distance to rivers, forests, and neighborhood parks around the complex | 2 |
| | | 144 | S5-1 Community Center and Facility Plan | Whether community facilities or community spaces above a certain level are created within the complex | 3 |
| 2. Energy resources and environmental load | 2-1. energy | 211 | R1-1 energy consumption | Energy consumption evaluation score Y=12X (EPI score -60)/25 (Calculation result rounded off to the second decimal place. If the evaluation score exceeds 12 points, 12 points | 12 |
| | 2-2. saving resources | 221 | Plan development considering S1-1 lifecycle changes | Percentage of flexible, merged, and on-demand flat-application households | 3 |
| | | 222 | R5-3 Use of environmentally friendly products | The number of products that have acquired the environmental mark and GR mark of the building subject to examination | 2 |
| | | 223 | R5-2 Feasibility of countermeasures against the use of furniture for living | Ratio of storage space to room area | 1 |
| | | 224 | R5-1 Environment-friendly (industrialization) method and application of new technology | Industrialization construction cost compared to the total construction cost of the building subject to examination and whether or not the adoption of state-certified new technology is applied | 3 |
| | 2-3.Environmental Pollution Load | 231 | L1-1 Carbon Dioxide Emission Reduction | 20% or more of the heating load is evaluated by using heat from cogeneration or by calculating the energy used and the resulting carbon dioxide emissions | 3 |
| | | 232 | L2-1 Separate collection of recycled domestic waste | Evaluated according to recycling household waste storage facilities and types of separated items | 1 |

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| | | 233 | L2-2 Food Waste Reduction | Evaluated according to storage, handling and treatment facilities for separate food waste collection, and whether or not food waste dehydrators are installed in households | 1 |
| | 2-4. water resources | 241 | R3-1 Feasibility of measures to reduce water supply for daily use | Reduction rate of water consumption per person per day of the building subject to examination compared to the standard building | 3 |
| | | 242 | R3-2 Storm water use | Evaluated according to the installation of facilities used for irrigation water, landscaping water, etc. using rainwater | 2 |
| | | 243 | L3-1 Relevance of Stormwater Load Reduction Measures | Percentage of pavement area with permeable pavement and ratio of rainwater permeation facility around ground parking lot, roadside, and trailside length | 3 |
| | 2.5. management | 251 | M1-1 Feasibility and implementation of environmental management plan during construction | Degree of satisfaction with related laws and industrial standards for environmentally sensitive matters at construction sites | 1 |
| | | 252 | M2-1 Adequacy of provision of operational/management documents and guidelines | Evaluate whether appropriate documents are prepared for the effective operation of the building subject to audit and related equipment/facilities | 2 |
| | | 253 | M2-2 user manual provided | Evaluation based on whether user manuals are provided to tenants | 1 |
| | | 254 | S5-2 Adequacy of adoption of information communication and advanced living facilities | When high-speed information and communication facilities are installed at level 1 or higher (2 points), when installed at level 2 or higher (1 point) + plan to provide Internet living contents/network (1 point) | 3 |
| 3. Ecological environment | 3-1. Utilization of natural resources | 311 | R2-4 Topsoil recycling rate | Ratio of recycled topsoil used for planting ground to total topsoil | 1 |
| | 3-2. | 321 | S4-2 Application of artificial | Evaluate retaining wall alternative greening, | 4 |

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| | Creation of green space within the complex | | environment greening techniques considering the ecological environment | artificial ground greening, and elevation greening with a formula considering area and difficulty | |
| | | 322 | C3-1 Green Space Ratio | Additional creation rate compared to legal standards for green space | 5 |
| | | 323 | C3-2 Creation of linked green belts | Creation of a continuous green axis within the complex, ecological connection between the complex green axis and external green areas | 2 |
| | 3-3. Creation of living space | 331 | C5-1 Aquatic Biotope Composition | Evaluated according to the aquatic biotope composition ratio and composition technique compared to the site area | 3 |
| | | 332 | C5-2 Terrestrial Biotope Composition | Evaluated according to the terrestrial biotope composition rate and composition method compared to the site area | 3 |
| 4. Indoor environment | 4-1. air environment | 411 | Q1-1 Use of materials with low emission of volatile organic substances | □ Calculated from (weight ① × 0.5) + (weight ② ×1.5) □ Weight: ① When using UFFI (0), when not using (1) ② Weight by number of products below the volatile organic substance emission standard 1 material (0.25), 2 materials (0 | 3 |
| | | 412 | Q1-2 Degree of natural ventilation design | Existence of ventilation openings or equipment facilities and degree of ventilation design | 3 |
| | 4-2. thermal environment | 421 | S2-1 Adoption of automatic temperature control system for each room | Application rate of automatic thermostat for each room or heating zone | 2 |
| | 4.4. sound environment | 441 | Q2-1 Level of sound insulation performance of boundary walls between households | The result of measuring the sound pressure level difference between real time according to the Korean Industrial Standards (KS F 2809) and the thickness of the wall structure (in the case of a reinforced concrete retaining wall) in the design drawing were evaluated as advantageous | 3 |

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| | 4.5. indoor space | 451 | S4-1 Balcony Green Space Ratio | Balcony Green Space Creation Ratio | 2 |
| | | 452 | S5-3 Relevance of care for the elderly and disabled | Evaluated according to the design level considering the elderly and disabled | 1 |
| | | | number of indicators | 38 | 100 |

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| A. Additional items | | A1 | Sound environment in complex C1-1 | Reduction of evaluation noise compared to environmental standards | 3 |
| | | A2 | R1-2 Use of alternative energy | Installation status and size of facilities using alternative energy such as solar hot water supply | 3 |
| | | A3 | R3-3 gray water installation | The ratio of using gray water that satisfies the gray water quality standards by installing gray water facilities | 4 |
| | | A4 | R2-3 Rate of conservation of existing natural resources | Natural resource conservation area of the building subject to examination ÷ site area × 100 | 3 |
| | | A5 | Q2-2 Inter-floor boundary floor impact sound blocking performance level | Evaluated according to the weight of each grade of impact sound blocking performance | 3 |
| | | A6 | Sunlight security rate within S3-1 household | Percentage of households receiving at least 2 hours of continuous sunlight between 9:00 am and 3:00 pm on the winter solstice day relative to the total number of households in the building subject to examination | 4 |
| | | | number of indicators | 6 | 20 |

| sector | number of indicators | points |
|---|---|---|
| Land Use and Transportation | 11 | 27 |

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|---|---|---|
| Energy and Environmental Pollution Load/Management | 15 | 41 |
| ecological environment | 6 | 18 |
| indoor environment | 6 | 14 |
| Additional items | 6 | 20 |
| **Sum** | **44** | **120** |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 land use traffic |
| evaluation category | 1-1 Changes in land use and quality of land |
| Evaluation standard | 1-1-1 Ecological value of the existing site |

■ Evaluation criteria

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|---|---|
| evaluation purpose | Evaluate the environmental and ecological value of the existing site to protect environmentally valuable land resources |
| Assessment Methods | Scores based on the ecological value of the existing site, land use status, use area, etc. |
| points | 1 point |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Ecological value of existing land | weight |
|---|---|---|
| 1st grade | If land with low ecological value occupies more than 80% of the total land area | 1.0 |
| 2nd grade | If land with low ecological value occupies more than 50% of the total land area | 0.5 |

Here, a land with low ecological value corresponds to a case that satisfies one of the following three conditions.

- Recognized for construction using previously used land (reused land) (reused land)
- Recognized for construction using the land where infrastructure is installed
- If located in a landfill, etc.

■ Evaluation Calculation Basis and Documents to be Submitted

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| Document of proof | -BREEAM New Office<br>- USGBC LEED Green Building Rating System<br>- Article 17 of the Urban Planning Act (designation of regions), Article 15 of the Enforcement Decree (division of regions),<br>- Article 53 of the Urban Planning Act (Restrictions on construction in regions or districts) |
| Documents to be submitted | - City planning checker<br>- Land use plan checker<br>- Transformation change checker |

| Green Building Certification Criteria | |
|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-1 Changes in land use and quality of land |
| Evaluation standard | 1-1-2 Whether a systematic upper level plan is established |
| ■ Evaluation criteria | |
| evaluation purpose | When going through a higher-level planning process such as urban planning, consider the environmental impact with the surrounding area.<br>evaluate being |
| Assessment Methods | urban design . Whether to establish a detailed plan, whether to establish a district unit plan, and considering harmony with other surroundings<br>Whether to establish a plan |
| points | 2 points |
| Calculation standard | • Establishment of upper plan<br>- Housing site development district according to the provisions of Article 3 of the Housing Site Development Promotion Act<br>- Site development project district according to the provisions of Article 33 of the Housing Construction Promotion Act<br>- In the case of an urban development zone according to the provisions of Article 2, Paragraph 1, Item 1 of the Urban Development Act<br>- District unit planning district according to Article 42 of the Urban Development Act<br>- When the plan is made according to the apartment district development plan<br>- In case the plan is made after going through a process beyond the urban planning review<br>* Only plans established through the establishment of a formal upper level plan and the deliberation process for legitimate higher level plans are recognized, and upper level |

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| | plans that are automatically recognized due to long-term non-execution of urban planning facilities are disapproved. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Article 3 of the Housing Site Development Promotion Act<br>- Article 33 of the Housing Construction Promotion Act<br>- Urban Development Act Article 2 Paragraph 1 Item 1<br>- Urban Development Act Article 42, etc. |
| Documents to be submitted | - Books related to upper plan<br>- Deliberation data related to upper plan<br>- Consultation data related to upper plan |

# Green Building Certification Criteria

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| evaluation section | 1 resource consumption |
| evaluation category | 1-1 Changes in land use and quality of land |
| Evaluation standard | 1-1-3 floor area ratio |

■ Evaluation criteria

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| evaluation purpose | By evaluating the floor area ratio, it is induced to secure the basic environmental level of the complex, such as the quality of outdoor space in the complex, comfort, and sunlight. |
| Assessment Methods | Planned floor area ratio evaluation |
| points | 6 points |
| Calculation standard | • Y = (-X+220)/10<br><br>※ Y: Rating X: Floor area ratio (%, maximum 220%)<br>- Maximum value: 6 points when the floor area ratio is 160%<br>- Minimum value: 0 points when the floor area ratio is 220%<br>- Negative scores are treated as 0 points |

■ Evaluation Calculation Basis and Documents to be Submitted

Document of proof

- Policy and Institutional Research for Sustainable Settlement Development Ⅲ, Ministry of Construction and Transportation, 2000
- Domestic residential complex floor area ratio case

| Floor area ratio (%) | Complex name (floor area ratio, %) | note |
|---|---|---|
| less than 100 | Mapo Apartment (67%), Banpo 1 Complex (87), Jamsil 4 Complex | lower |

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| | (90), Banpo 2 Complex (94), Gaepo 4 Complex (89), Godeok 3 Complex (74), Gwacheon 6 Complex (83), etc. | middle class |
| 100 to 150 | Han River Mansion (101%), Jamsil 5 Complex (130), Dogok 3 Housing Complex (116), Deungchon-dong Apartment (119), Mok-dong 7 Complex (109), Gaepo-dong 2-cha (149), Mok-dong District 12 Complex 16 Zone (126) ), Bundang E12-1 (131), Asian Village (135), Olympic Village (137), etc. | mixed-use complex |
| 150 ~ 200 | Apgujeong Hyundai (180%), Gaepo 5 Danji (173), Changdong 2 Danji (190), Daechi-dong Siyeong (183), Bundang Sibeom 2 Block (192), Ilsan 10-3 Block (163), Bundang F2-13 Block ( 164), Bucheon Sosa (180), Gongneung 2 District 6 Complex (197), Suji Samsung Employee Lease (169), etc. | high-rise complex |
| over 200 | Bundang Demonstration Complex 3 Block (202%), Guro District 3 Redevelopment (246), Sanbon Samsung (221), Bucheon Jung-dong 5-1 Block (224), Seoul Suseo Samsung Samho (249), Neunggok Jugong 9 Complex (254), Anyang Byeoksan (285), Guriinchang Jugong Complex 2 (228), Namyangju Deokso Hyundai (277), Suwon Jeongja Block 16 (240), etc. | high-rise complex |
| over 300 | Gongdeok 1 redevelopment (309), Dogok-dong reconstruction (349), Amsa-dong reconstruction (395), etc. | Reconstruction and redevelopment |

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| Documents to be submitted | - Complex plan outline<br>- Floor area ratio calculation statement |

# Green Building Certification Criteria

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|---|---|---|
| evaluation section | 1 | Land Use and Transportation |
| evaluation category | 1-2 | Impact on site or adjoining land |
| Evaluation standard | 1-2-1 | Feasibility of measures to prevent interference with the right of sunlight to adjacent land |

■ Evaluation criteria

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| evaluation purpose | Evaluate whether the horizontal distance from the adjacent site boundary line to the building subject to examination is appropriate so that the building subject to examination does not block useful daylight to the adjacent site. |
| Assessment Methods | The maximum elevation angle measured by the height of each part of the building subject to examination from the site boundary line adjacent to the ground |
| points | 2 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br><br>※ The maximum elevation angle (V) measured by the height of each part of the building subject to examination from the land boundary line adjacent to the ground |

| division | The maximum elevation angle measured by the height of each part of the building subject to examination from the site boundary line adjacent to the ground | weight |
|---|---|---|
| 1st grade | V < 30° | 1.0 |
| 2nd grade | 30° ≤ V < 35° | 0.8 |
| 3rd grade | 35° ≤ V < 40° | 0.6 |

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| 4th grade | 40° ≤ V < 50° | 0.4 |
| 5th grade | 50° ≤ V < 60° | 0.2 |

※ - Natural light interference for adjacent buildings is considered for all surrounding buildings or sites, but in most cases, it is performed as an evaluation of the building or site closest to the north of the building to be evaluated.

- Consideration should be given not only to the existing structures, but also to their potential impact on the development of adjacent sites in the future.
- Site boundary line (recognition boundary line): boundary line between neighboring sites

■ Evaluation Calculation Basis and Documents to be Submitted

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| Document of proof | - Article 53 of the Building Act (restrictions on the height of buildings to secure sunlight, etc.)<br>- Ministry of Construction and Transportation Environment-friendly Building Design Guidelines (Ministry of Construction and Transportation, 1999.12) |
| Documents to be submitted | - Complex layout map (notation of In-dong distance)<br>- Longitudinal and cross-sectional view of the northern site<br>- Indong Street Layout<br>- Calculation of elevation angle |

# Green Building Certification Criteria

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| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-3 traffic |
| Evaluation standard | 1-3-1 Proximity to public transport |

■ Evaluation criteria

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| evaluation purpose | It is intended to induce reduction of pollution and energy consumption through public transportation. |
| Assessment Methods | Walking distance to public transportation facilities (railway station, subway station, bus terminal, bus stop) |
| points | 2 points |

**Calculation standard**

• Rating = (Weight by grade) × (Point distribution)

| division | Walking distance from public transportation facilities | weight |
|---|---|---|
| 1st grade | When two or more public transport options are located within 200 m | 1.0 |
| 2nd grade | If the nearest public transport is within 150m | 0.8 |
| 3rd grade | If the nearest public transport is within 150m or 200m | 0.6 |
| 4th grade | If the nearest public transport is within 200m or more and 250m | 0.4 |
| 5th grade | If the nearest public transport is within 250m or 300m | 0.2 |

※ - Walking distance refers to the physical distance using the safest and most convenient road

- Submission of documentary evidence proving proximity to public transportation at

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| | the time of evaluation<br>If it is difficult, additional points will be applied from the actual operation (e.g., bus, etc.)<br>- The distance is calculated from the most advantageous entrance in the complex |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Ministry of Construction and Transportation Environment-friendly Building Design Guidelines (Ministry of Construction and Transportation, 1999.12)<br>- Article 2 of the Urban Traffic Improvement Promotion Act<br>"Means of transportation" means a bus used to move people or goods from one point to another . It refers to trains (including urban railway trains) and other means of transportation prescribed by the Presidential Decree.<br>- Urban Railway Basic Plan |
| Documents to be submitted | - Land use plan map of housing site development district, situation map near the site<br>- Materials related to public transportation facilities adjacent to the building subject to review (urban railway master plan, etc.) |

# Green Building Certification Criteria

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| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-3 traffic |
| Evaluation standard | 1-3-2 Distance between city center, regional center and complex center |

■ Evaluation criteria

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| evaluation purpose | Evaluate the location of cultural, administrative, sports, business facilities and living convenience facilities located in the center of the region, which are facilities used by residents, to induce convenience of residence and suppression of traffic. |
| Assessment Methods | Measurement of straight-line distance between city center, regional center and complex center |
| points | 2 points |
| Calculation standard | ※ Among the two conditions below ( 1), 2) ), the evaluation is more favorable<br>1) Distance to the center of the region ( • rating = (weighted by rating) × (points allocated)) |

| division | distance to area center | weight |
|---|---|---|
| 1st grade | If the distance from the complex to the center of the region is less than 500m | 1.0 |
| 2nd grade | If the distance from the complex to the center of the region is less than 1 km | 0.5 |

2) Distance to city center ( • Rating = (Weighted by rating) × (Points assigned))

| division | distance to city center | weight |
|---|---|---|
| 1st grade | If the distance from the complex to the city center is less than 2 km | 1.0 |
| 2nd grade | If the distance from the complex to the city center is less than 5 km | 0.5 |

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| | - city center<br>. There are business facilities, central commercial facilities, subway stations, railway stations, and direct buses connecting cities.<br>It means a place that is the center of the life of city dwellers.<br>. In the case of a housing site development district and an area with more than 15,000 households, where an independent city center is planned<br>. Areas with less than 15,000 households that are housing site development districts are recognized as city centers near subway stations<br>- Local centered<br>. As the central area of 4-6 complexes (3,000 households), neighborhood living facilities (local shopping malls, beauty salons, bakeries, academies, clinics, etc.) that can meet the basic needs of daily life are concentrated<br>※ The city and regional center for distance calculation is based on the physical center point of the center area, but if there is a clear functional center point (department store, subway station, etc.), it can be used as the standard. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Complex planning, Korean Land and Urban Planning Association, 1997<br>- Policy and Institutional Research for Sustainable Settlement Development Ⅲ, Ministry of Construction and Transportation, 2000 |
| Documents to be submitted | - Location map showing city center - Location map showing regional center<br>- Housing site development plan - Complex plan |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-3 traffic |
| Evaluation standard | 1-3-3 Installation of bicycle storage and bicycle paths in the complex |

■ Evaluation criteria

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| evaluation purpose | Enables a human-friendly transportation environment by determining whether a bicycle storage area and bicycle roads are installed, and promotes reduction of energy consumption and pollution |
| Assessment Methods | Measurement of suitability and connectivity of bicycle roads |
| points | 2 points |

**Calculation standard**

• Rating = (Weight by grade) × (Point distribution)

| division | Measurement of suitability and connectivity of bicycle roads | weight |
|---|---|---|
| 1st grade | If more than 15 bicycle storage facilities are installed for every 100 households and a bicycle road is planned within the complex | 1.0 |
| 2nd grade | If more than 15 bicycle storage areas are installed for every 100 households, or a bicycle road is planned within the complex | 0.5 |

※ - Calculation of the size of the bicycle installation storage facility (considering the location: welfare center or commercial building and

At least one must be placed in each location, placed adjacent to the pilotis and entrances of the main building)

- In the case of a road within a complex where both a pedestrian-only road and a

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| | bicycle road are created, the length must be 6m or more.<br>It is recognized that it is created, and the width of the bicycle-only road is at least 2m.<br>admit |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Standards for installing bicycle parking lots (Regulations on Structure and Facility Standards for Bicycle Facilities Article 16)<br>. It should be installed in a place where cyclists can use it safely and conveniently, and signs for bicycle parking lots should be installed so that there are no obstacles to passers-by.<br>. For the convenience of bicycle parking, install a bicycle parking device and a tent to cover snow and rain.<br>. Facilitate the installation of a device to prevent bicycle theft<br>. To install lighting facilities so that there is no inconvenience when using them at night<br>- Classification of bicycle roads (Article 3 of the Act on the Promotion of Bicycle Use)<br>. Bicycle-only road: A bicycle road that is separated from roads and sidewalks by separators, curbs, and similar facilities so that only bicycles can pass<br>. Roads for bicycles and pedestrians: Bicycle roads that are separated from roads or installed separately by separators, continuations, and other similar facilities so that pedestrians in addition to bicycles can pass.<br>. Roads for bicycles and cars: Bicycle roads that are divided into roads with road markings so that vehicles other than bicycles can pass temporarily. |
| Documents to be submitted | - Bicycle road network creation plan and blueprint |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-4 Creation of living environment |
| Evaluation standard | 1-4-1 Creation of pedestrian-only roads within the complex |

■ Evaluation criteria

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| evaluation purpose | Installation of pedestrian-only roads in the complex to create a pleasant walking environment and connection with various rest facilities<br>Inducing connectivity |
| Assessment Methods | Assessment of the status of pedestrian-only roads and connectivity with facilities within the complex |
| points | 3 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution) |

| division | Pedestrian-only road construction status | weight |
|---|---|---|
| 1st grade | If it is created in connection with the rest area and community space in the complex | 1.0 |
| 2nd grade | If it is created without connection with rest and community spaces in the complex | 0.5 |

※ - Evaluate whether or not a pedestrian-only road was created within the complex

- Minimum length of pedestrian-only roads: More than 1/4 of the entire circumference of the complex
- The minimum width of the pedestrian-only road shall be 4m
- Cross slope should be at least 1.5% and at most 5%, with 2% being the standard

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| | ※ Criteria for judging linkage with rest areas and community spaces in the complex<br>- In case of being connected to the walking ecological axis (silver stream, green road, etc.)<br>- More than 2/3 (area or location) of rest areas, playgrounds, and playgrounds in the complex are pedestrian-only roads<br>If it is closely related to<br><br>※ Judgment Criteria<br>- Determine whether a pedestrian-only road has been created within the complex ( the minimum length of the pedestrian-only road must be greater than the average length of the length of the complex) and evaluate whether it has been created in connection with rest areas and community spaces within the complex |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Policy and Institutional Research for Sustainable Settlement Development Ⅲ , Ministry of Construction and Transportation, 2000 |
| Documents to be submitted | - Complex plan<br>- Design drawing for pedestrian-only roads in the complex |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-4 Creation of living environment |
| Evaluation standard | 1-4-2 Whether or not the network is connected to the pedestrian-only road |

■ Evaluation criteria

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|---|---|
| evaluation purpose | Induce the creation of a pleasant walking environment through systematic connection with facilities within the complex, neighborhood living facilities outside the complex, and transportation facilities such as subway stations |
| Assessment Methods | Measurement of connectivity with external pedestrian-only road networks |
| points | 1 point |
| Calculation standard | • Rating = (weight by grade) × (point distribution) |

| division | Whether the pedestrian-only road is connected to the outside world | weight |
|---|---|---|
| 1st grade | In case the pedestrian-only road within the complex is connected to the external pedestrian-only road network without a fence or in several places | 1.0 |
| 2nd grade | When the pedestrian-only road within the complex is simply connected to the external pedestrian-only road network | 0.5 |

※ Judgment Criteria (Level 1)

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| | - In case of connection with an external pedestrian network and without a fence<br>- If the outer connection is connected with the same number of entrances and exits as the residential building<br>- If it is created as a hedge of 0.6m or less and has more than the number of entrances to the number of residential buildings in the external pedestrian-only road network, it is considered connected without a fence. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Policy and Institutional Research for Sustainable Settlement Development Ⅲ, Ministry of Construction and Transportation, 2000 |
| Documents to be submitted | - Complex plan<br>- Detailed drawing of the connection between the pedestrian-only road in the complex and the external arterial greenway |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-4 Harmony with the surrounding nature |
| Evaluation standard | 1-4-3 Accessibility to rivers and forests around the complex |

■ Evaluation criteria

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|---|---|
| evaluation purpose | Measuring the level of a healthy and nature-friendly environment by evaluating the accessibility to ecological resources such as rivers and forests around the complex |
| Assessment Methods | Assessment of proximity and distance to rivers, forests, and neighborhood parks around the complex |
| points | 2 points |

Calculation standard

• Rating = (Weight by grade) × (Point distribution)

| division | | weight |
|---|---|---|
| 1st grade | If the complex is directly adjacent to a river, forest, neighborhood park, etc. | 1.0 |
| 2nd grade | If the complex is located within 500m of a river, forest, neighborhood park, etc. | 0.5 |

※ - If the ecological resources around the complex are directly connected to the pedestrian-only road, it is regarded as an adjacent case.

flagship

- In case of adjacency, at least 70% of one of the boundaries of the complex must be in contact

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| | - Even if it is adjacent, if accessibility is poor due to excessive retaining walls or fences installed,<br>Excluded from contact case (in this case, a connection passage must be made)<br><br>※ Calculate the shortest straight-line distance based on the boundaries of the complex, river, and forest. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Policy and Institutional Research for Sustainable Settlement Development Ⅲ , Ministry of Construction and Transportation, 2000 |
| Documents to be submitted | - Complex layout and detailed drawings of connection parts<br>-Location map showing surrounding ecological resources and neighborhood parks |

# Green Building Certification Criteria

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|---|---|
| evaluation section | 1 Land Use and Transportation |
| evaluation category | 1-4 Creation of living environment |
| Evaluation standard | 1-4-4 Community center and facility planning |

■ Evaluation criteria

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| evaluation purpose | Space and facility planning that promotes community formation within a residential complex is an important planning element that enhances the social sustainability of a residential complex. Therefore, efforts to promote community in residential complexes are evaluated through planning of community centers or community spaces. |
| Assessment Methods | Whether community facilities or community spaces above a certain level are created within the complex |
| points | 3 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Community center and space planning | weight |
|---|---|---|
| 1st grade | If a community center is planned to revitalize the community of residents in the complex | 1.0 |
| 2nd grade | When community facilities are planned to revitalize the community of residents in the complex | 0.5 |

- Evaluate community center or facility planning within the complex

※ Definition of term

- A community center is a place where residents can gather and do community

| | |
|---|---|
| | activities.<br>Means a separately planned building<br>- Facilities (meeting facilities, hobby room, reading room, lecture room, etc.) that residents can use in common must be installed in the community center. In addition, legally regulated facilities are excluded from area calculation.<br>- Community facilities include the central plaza, open-air theater, and theme plaza within the complex. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Complex planning, Korean Land and Urban Planning Association, 1997<br>- Policy and Institutional Research for Sustainable Settlement Development Ⅲ, Ministry of Construction and Transportation, 2000<br>- Collaborative Communities, Dorit Fromm, New York, 1991 |
| Documents to be submitted | - Complex plan<br>- Drawings related to community center or space planning |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-1 energy |
| Evaluation standard | 2-1-1 energy consumption |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Since the energy consumption of buildings is closely related to the emission of greenhouse gases caused by the use of fossil fuels, energy consumption in the operation stage, which consumes the most energy in the life cycle of buildings, is measured with the intention that energy savings in buildings will suppress greenhouse gas emissions. By evaluating in advance, we want to reduce the energy of the building and further reduce the emission of greenhouse gases. |
| Assessment Methods | Evaluated based on the scores obtained from the 'Energy Performance Index' (EPI: Energy Performance Index) of the energy-saving design standards for buildings (Notification No. 2001-118 of the Ministry of Construction and Transportation, May 11, 2001) |
| points | 12 points |
| Calculation standard | • Energy consumption evaluation score Y = 12 × (EPI score-60) ÷ 25<br>※ - Round off from the second decimal place of the calculated result<br>- If the evaluation score exceeds 12 points, the highest evaluation score is 12 points |

■ Evaluation Calculation Basis and Documents to be Submitted

Document of proof

※ Energy consumption according to EPI score (excluding energy consumption by cooking and home appliances)

| EPI score | 60 points | 70 points | 80 points | 90 points | 100 points |
|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | energy consumption (Mcal/ ㎡·year ) | 160 | 142 | 124 | 106 | 88 |
| | energy consumption ratio(%) | 100 | 88.8 | 77.5 | 66.3 | 55 |

- Since the EPI score has a proportional relationship with the amount of energy consumption, the evaluation score is given based on the EPI score.
- With the goal of 'reducing 25% compared to current energy consumption', which is the government's mid- to long-term goal of energy efficiency improvement for buildings in the second stage, the highest evaluation score is obtained when the EPI score is 85 points.

- Research on mid- to long-term measures for energy conservation of buildings in response to the Climate Change Convention, Ministry of Construction and Transportation, 1999
- Research on system improvement for building energy saving, Ministry of Commerce, Industry and Energy, 2000

| | |
|---|---|
| Documents to be submitted | - Energy saving plan and related evidence (drawings, reports, etc.) |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-2 saving resources |
| Evaluation standard | 2-2-1 Flat development considering life cycle changes |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The purpose is to prevent the waste of materials due to unnecessary renovation of houses by inducing flat development that can respond to changes in the future life cycle and lifestyle of residents. |
| Assessment Methods | Whether or not the floor plan such as flexible type, merged type, and custom type is applied to each unit household |
| points | 3 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution)<br><br>※ Flat applied household ratio (V) = X ÷ Y × 100<br>X: The number of flat-application households such as variable type, merged type, and custom type<br>Y: total number of households |

| division | Ratio of flat applied households such as variable type, merged type, and custom type | weight |
|---|---|---|
| 1st grade | V≥50% | 1.0 |
| 2nd grade | 40% ≤ V < 50% | 0.8 |
| 3rd grade | 30% ≤ V < 40% | 0.6 |

<table>
<tr><td></td><td>
<table>
<tr><td>4th grade</td><td>20% ≤ V < 30%</td><td>0.4</td></tr>
<tr><td>5th grade</td><td>10% ≤ V < 20%</td><td>0.2</td></tr>
</table>
– Variable plane: Residents can arbitrarily change the location of walls other than load-bearing walls inside the house<br>
A plan planned for demolition<br>
– Merged Plane: Two generations can be expanded into one generation in response to the growth period of family members.<br>
Plan considered from the planning stage<br>
– On-demand flat: Decisions can be made through meetings with residents from the early planning stage.<br>
If locked, a variety of floor plans are available to allow residents to choose from a number of flats.<br>
In the case of surface development, all cases where the internal structure can be selected on the same plane<br>
include
</td></tr>
<tr><td colspan="2">■ Evaluation Calculation Basis and Documents to be Submitted</td></tr>
<tr><td>Document of proof</td><td></td></tr>
<tr><td>Documents to be submitted</td><td>– Unit household floor plan, location change, wall details to be demolished<br>– Calculation of applied household ratio</td></tr>
</table>

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-2 saving resources |
| Evaluation standard | 2-2-2 Use of eco-friendly products |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The purpose is to obtain effects such as resource recycling, energy saving, and environmental pollution reduction by evaluating the use of environmentally friendly materials. |
| Assessment Methods | Evaluate whether the environmental mark or GR mark has been acquired |
| points | 2 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br>• Weight by grade: 1st grade (1.0), 2nd grade (0.8), 3rd grade (0.6), 4th grade (0.4), 5th grade (0.2) |

| division | Number of eco-friendly materials used | weight |
|---|---|---|
| 1st grade | When 9 or more species are used | 1.0 |
| 2nd grade | When 7 or more species are used | 0.8 |
| 3rd grade | If 5 or more species are used | 0.6 |
| 4th grade | When 3 or more species are used | 0.4 |
| 5th grade | If more than one species is used | 0.2 |

| | |
|---|---|
| | ※ Eco-friendly materials: materials that have obtained the environmental mark or GR mark and are recognized when applied to more than 2/3 of the total number of households, and materials that are not applied inside the household, such as roof waterproofing and exterior materials, are recognized when applied to the entire building |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Eco-Label Target Products and Grant Criteria (Ministry of Environment Notice No. 2000-162)<br>- Guidelines for Quality Certification of Recycled Products (Notice No. 1997-87 of the National Institute of Technology and Quality)<br>Act on the Promotion of Saving and Recycling of Resources, Article 14 of the Enforcement Decree of the Industrial Development Act |
| Documents to be submitted | - Certificate for each material, product manual<br>- Environmentally friendly materials use plan<br>- Calculation of application rate |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-2 saving resources |
| Evaluation standard | 2-2-3 Feasibility of countermeasures against the use of furniture for living |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | In the long run, curbing private ownership of living furniture can reduce the demand for materials for new furniture. Through the evaluation of this item, it is intended to induce the installation of storage space for living in the household. |
| Assessment Methods | Ratio of storage space to room area |
| points | 1 point |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br><br>※ The area ratio of the storage space to the area of the building subject to examination (V) = X ÷ Y × 100<br>X: Area of all storage spaces of all households in the building subject to examination ( ㎡)<br>Y: Area of all rooms of all households in the building subject to examination ( ㎡) |

| division | Area of storage space compared to room area (V) | weight |
|---|---|---|
| 1st grade | V ≥ 13% | 1.0 |
| 2nd grade | 11% ≤ V < 13% | 0.8 |

| | | |
|---|---|---|
| 3rd grade | 9% ≤ V < 11% | 0.6 |
| 4th grade | 7% ≤ V < 9% | 0.4 |
| 5th grade | 5% ≤ V < 7% | 0.2 |

※ Storage space: Typically refers to built-in cabinets, which are large enough to replace 'living furniture' such as wardrobes and closets (minimum 0.6m(D)×1.2m(W)×1.8m(H)=1.296 ㎥ ) of space. However, the storage space installed on the veranda and the decoration cabinets, closets, and shoe cabinets in the living room that are normally installed are excluded from the evaluation.

※ Area: The living room is not included when calculating the area of the room, and the dressing room is included in the area.

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Ministry of Construction and Transportation Environment-friendly Building Design Guidelines (Ministry of Construction and Transportation, 1999.12) |
| Documents to be submitted | - Floor plan by household, detailed drawing of storage space (furniture), calculation of storage space ratio compared to area |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 2 | Energy/Resources and Environmental Load |
| evaluation category | 2-2 | saving resources |
| Evaluation standard | 2-2-4 | Application of environment-friendly (industrialization) method and new technology |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | New construction, renovation, maintenance, and operation of buildings require a large amount of materials from nature, which can cause resource depletion, energy consumption, and air/water/solid waste problems. These problems are minimized by evaluating the degree of application of construction methods to minimize waste materials that may occur at the construction site in the design of the building subject to review.<br>In addition, by applying new environment-related technologies recognized by the state, we will contribute to the creation of eco-friendly buildings and promote the development of new environment-related technologies in the long term. |
| Assessment Methods | Adoption of state-approved new technologies related to industrialized construction and environment |
| points | 3 points (environmentally friendly industrialization method: 1 point, environment-related new technology: 2 points) |
| Calculation standard | • Total Rating = Rating 1 + Rating 2<br><br><u>1) Application of environment-friendly industrialization method</u><br>• Rating 1 = (weight by grade) × (point distribution)<br><br>※ Composition ratio of industrialized buildings (V) = X ÷ Y × 100<br>X: Industrialization method construction cost of the building subject to examination (KRW), Y: Total construction cost of the building subject to examination (KRW) |

| division | Composition ratio of industrialized buildings (V) | weight |
|---|---|---|

| | | |
|---|---|---|
| 1st grade | V ≥ 1.0% | 1.0 |
| 2nd grade | 0.8% ≤ V < 1.0% | 0.8 |
| 3rd grade | 0.6% ≤ V < 0.8% | 0.6 |
| 4th grade | 0.4% ≤ V < 0.6% | 0.4 |
| 5th grade | 0.2% ≤ V < 0.4% | 0.2 |

※ Industrialization method: A method of simply assembling the main members of a building in a factory with PC members, prefabricated panels, modules, etc. (PC, steel frame, curtain wall, system form, etc.) to suppress the occurrence of surplus materials for on-site construction techniques that can be done. In general, the process of importing and constructing ready-made products (furniture construction, window construction, etc.) and mechanical and electrical systems are excluded.

(Including the application of special environment-friendly planning elements and construction methods)

2) New technologies related to the environment

• Score 2: In case of adoption/application of nationally certified new technology (1 point per case, maximum 2 points applied)

※ Scope of new technology recognition (new technology certified by the Ministry of Environment and Ministry of Construction and Transportation)

- New environmental technology: Environmental technology according to Article 2, Subparagraph 1 of the "Environmental Technology Development and Support Act"
- New construction technology: New construction technology in accordance with Article 18 of the "Construction Technology Management Act" and Article 32 of the Enforcement Decree of the same Act

(However, it must be possible to confirm that the "technology overview" and "protection contents" of the new technology designation certificate are related to environmental technology.)

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Ministry of Construction and Transportation Environment-friendly Building Design Guidelines (Ministry of Construction and Transportation, 1999.12)<br>- Regulations on environmental technology evaluation procedures and evaluation |

| | |
|---|---|
| | standards (Ministry of Environment Notice No. 2000-104)<br>- Regulations on evaluation criteria and evaluation procedures for new technologies (Ministry of Construction and Transportation Notice No. 1999-383) |
| Documents to be submitted | - Industrialization method application manual, industrialization method cost calculation<br>- New environmental technology designation certificate and new technology designation certificate<br>- New technology application plan (design drawing, specifications, etc.) |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-3 environmental pollution load |
| Evaluation standard | 2-3-1 CO2 emission reduction |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Since carbon dioxide is a representative greenhouse gas and a large amount is generated in the construction sector, it is intended to reduce environmental load by considering it from the planning stage of a building. To this end, the technology applied to reduce carbon dioxide emissions in the design and operation stages and the carbon dioxide emissions by energy source used are evaluated. |
| Assessment Methods | Evaluate 20% or more of the heating load by using heat from cogeneration or by calculating the energy source used and the resulting carbon dioxide emission |
| points | 3 points |
| Calculation standard | • Ratings |

| CO2 emission reduction | grade |
|---|---|
| 1) If 20% or more of the annual heating load is covered by the system [(a) below] | 3.0 |
| 2) District heating system building | 2.0 |
| 3) Other buildings: (23.23 [(b)] ÷ CO2 emissions [(c)])×2 | |

(a) systems capable of reducing carbon dioxide emissions;

- Heating system using heat and power array

(b) Carbon dioxide emissions when using LNG fuel and acquiring 100 points in EPI (kg / ㎡ yr)

(c) Calculated value of energy consumption by EPI score (-1.8 × EPI score + 268) × CO2 emission factor

■ Evaluation Calculation Basis and Documents to be Submitted

**Document of proof**

1) Calculated value of energy consumption by EPI score

| EPI score | 60 points | 70 points | 80 points | 90 points | 100 points |
|---|---|---|---|---|---|
| energy consumption 【Mcal/㎡yr】 | 160 | 142 | 124 | 106 | 88 |

2) Carbon dioxide emission factor by energy source

| energy source | CO2 emission factor [kg/Mcal] |
|---|---|
| city gas | 0.263996 |
| LPG | 0.263996 |
| Via | 0.310042 |
| bunker C u | 0.323858 |

※ Carbon emission factor by energy source: IPCC carbon emission factor

**Documents to be submitted**

- Related system documentation and load calculations
- Energy performance review and related data to confirm the fuel used

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-3 environmental pollution load |
| Evaluation standard | 2-3-2 Separate collection of recycling household waste |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | We intend to promote the recycling of household waste through the separate collection of solid waste among household waste generated within the complex. |
| Assessment Methods | Establishment of recycling household waste storage facilities and evaluation by type of separated items |
| points | 1 point |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Separate collection of recycling household waste | weight |
|---|---|---|
| 1st grade | Installation of recycling household waste storage facilities and containers for each building capable of separate collection of 6 or more types | 1.0 |
| 2nd grade | Installation of containers for each building that can separate 6 or more types of collection | 0.7 |
| 3rd grade | Installation of containers for each building that can separate 5 types of collection | 0.4 |

※ Building 1 is based on 150 households

※ Household waste storage facility size

('Survey on household waste disposal in apartment complexes', Korea National Housing Corporation, '98.12)

| division | less than 150 households | 230 households or less |
|---|---|---|

| | | | |
|---|---|---|---|
| | Scale | 4.5m×3.0m (quadrant) | 4.5m×4.5m (6 equilibrium) |
| | note | 1.5m door installation | |
| | * Amount of recycled domestic waste generated per household<br>0.363 [1] (kg / day.person )×0.35 [2] ×10 days×5.3 [3] (ℓ/kg )×4 days/household = 0.02693 ㎥<br>1) Amount of domestic waste generated in apartments ('96 National Waste Statistical Survey, Ministry of Environment, '97.8)<br>2) Recycling rate ('98 environmental white paper, 2001 target)<br>3) Recycling waste volume coefficient ('Development of waste management system for recycling', '94.9, Korea Resources Recycling Corporation) | | |

## ■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Article 16 of the Waste Management Act (Installation of domestic waste storage facilities, etc.)<br>The head of a Si/Gun/Gu may have domestic waste dischargers install domestic waste storage facilities or containers in accordance with the standards set by the Ordinance of the Ministry of Environment (Appendix 5 of the Enforcement Rules) as stipulated by the ordinance of the relevant local government.<br>- Article 17 of the Act on the Promotion of Saving and Recycling of Resources ( separate collection of recyclable resources)<br>For the efficient use of recyclable resources, the Minister of Environment may organize a nationwide separate collection system as prescribed by the Ordinance of the Ministry of Environment.<br>- Investigation of household waste treatment in apartment complexes (Korea National Housing Corporation, 1998.12) |
| Documents to be submitted | - Complex layout<br>- Floor plan of domestic waste storage facility |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-3 environmental pollution load |
| Evaluation standard | 2-3-3 food waste reduction |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Most of the food waste is landfilled, causing problems such as polluting groundwater or lack of landfills. Therefore, installing a food processing device in each complex or household can induce recycling into compost or feed for landscaping purposes and reduce the problem of lack of space in landfills. |
| Assessment Methods | Evaluated according to storage and handling facilities for separate food waste collection and whether food waste dehydrators are installed in households |
| points | 1 point |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Food waste separation device | weight |
|---|---|---|
| 1st grade | If a food waste dehydrator is installed in the household | 1.0 |

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Regulations on Housing Construction Standards, etc. Article 38 (Waste Storage Facility)<br>: Household waste storage facilities or containers according to the provisions of Article 16 Paragraph 1 of the Waste Management Act must be installed in the housing complex, and the installation location must be accessible by vehicle and convenient for residents to use.<br>- Ministry of Construction and Transportation Environment-friendly Building Design Guidelines (Ministry of Construction and Transportation, 1999.12) |
| Documents to be submitted | - Complex layout, unit household floor plan<br>- Layout of garbage collection box<br>- Food processing equipment product specification<br>- Food waste dehydrator product specification |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-4 water resources |
| Evaluation standard | 2-4-1 Feasibility of measures to reduce water supply for daily use |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The increase in water demand due to the increase in the urban population causes problems such as deterioration of water quality and increase in the cost of urban sewage treatment. By evaluating the reduction rate of water consumption for living, it is possible to reduce energy, water supply, and facilities and costs for sewage treatment. |
| Assessment Methods | Evaluated according to the water consumption reduction rate per person per day of the building to be reviewed compared to the standard building |
| points | 3 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br><br>※ Constant reduction rate (V) = (X − Y) ÷ X × 100<br>X: 168.3L (standard building water consumption (L/person))<br>Y: Water consumption of the building subject to examination (L/person) |

| division | Constant savings rate (V) | weight |
|---|---|---|
| 1st grade | V≥30% | 1.0 |
| 2nd grade | 25% ≤ V < 30% | 0.8 |
| 3rd grade | 20% ≤ V < 25% | 0.6 |

| | | |
|---|---|---|
| 4th grade | 15% ≤ V < 20% | 0.4 |
| 5th grade | 5% ≤ V < 15% | 0.2 |

※ Design and management plans for water reduction (installation of adequate water in sinks, toilets, bathtubs, showers, and evaluation of measures to reduce water supply for living use by reflecting high-efficiency water-saving facilities (faucets, toilets, etc.)

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Relevant law: Waterworks Act Article 11-2 (Installation of water-saving equipment)<br>- National Waterworks Comprehensive Plan (Ministry of Environment, 1998) Household water consumption by use ('96) |
| Documents to be submitted | - Utilization water reduction facility design drawing and related specifications, water saving management plan, basis for calculation of reduction, etc.<br>- Gray water design specifications for gray water facilities |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-4 water resources |
| Evaluation standard | 2-4-2 excellent use |

■ Evaluation criteria

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|---|---|
| evaluation purpose | The use of rainwater suppresses the outflow of rainwater during rainfall, converts it into water resources and recycles it, so that effects such as reduction of water consumption and control of rainwater outflow can be expected, and it can lead to energy saving and reduction of the size of public facilities, so efficient use of water resources want to do |
| Assessment Methods | Evaluated according to the installation of facilities using rainwater as water for sprinkling and landscaping according to the criteria for gray water facilities |
| points | 2 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | stormwater usage | weight |
|---|---|---|
| 1st grade | When installing facilities that use rainwater equivalent to 5% or more of living water | 1.0 |
| 2nd grade | When installing facilities that use rainwater equivalent to 2% or more of living water | 0.5 |

- Points are calculated when rainwater is used as water for sprinkling, landscaping, water for flush toilets, water for car washing and cleaning, etc. according to the water quality standards of gray water by installing a water tank or detention pond to store rainwater.

※ Water for living: Comprehensive National Waterworks Plan ('98, Ministry of Environment)

| | |
|---|---|
| | Household water usage in Korea by use ('96): 168.3 ℓ |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | – Ministry of Environment: Article 3 of the Enforcement Rule of the Water Supply Act (water quality standards for gray water)<br>Article 11-3 of the Waterworks Act (matters concerning the installation of rainwater utilization facilities, amended on March 28, 2001)<br>Article 4-3 of the Enforcement Rule of the Water Supply Act (facility standards for rainwater utilization facilities, etc.)<br>– Ministry of Construction and Transportation: Urban Planning Facility Standards 120 and 122<br>Guidelines for installation and operation of detention facilities in urban parks<br>– A study on installation techniques for rainwater runoff reduction facilities ( Ⅲ ), Ministry of Government Administration and Home Affairs, National Disaster Prevention Research Institute, 2000<br>Definition of terms according to gray water quality standards:<br>1. "Water for sprinkling" refers to gray water used for sprinkling in the case of road cleaning work or construction work.<br>2. "Landscaping water" refers to gray water used for artificial ponds, artificial waterfalls, artificial rivers and fountains in housing complexes, etc.<br>However, in this evaluation item, irrigation water is included in landscaping water. |
| Documents to be submitted | – Detention pond or reservoir drawing, pipe drawing, and total available rainfall per year in the target watershed<br>– Rainwater retention, utilization facilities, and greywater facility specifications |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-4 Storm and sewage (Liquid Effluent) |
| Evaluation standard | 2-4-3 Relevance of Stormwater Load Reduction Measures |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Reduction of stormwater load by stormwater runoff control facilities reduces urban flooding during localized heavy rains, reduces construction and management costs for stormwater drainage facilities such as sewers, treatment plants, and rainwater reservoirs, as well as maintenance of soil ecosystem, river water volume, and groundwater Since it is possible to obtain effects such as securing quantity, the purpose is to obtain such an effect. |
| Assessment Methods | Evaluated according to the installation of water permeable pavement by infiltration type facility (infiltration method) that reduces rainwater, rainwater detention pond and comprehensive rainwater treatment facility in the site |
| points | 3 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Stormwater Runoff Containment Facility | weight |
|---|---|---|
| 1st grade | In the case of permeable pavement covering 35% or more of the pavement area ratio or installing rainwater permeation facilities around 80% or more of the length of the ground parking lot, roadside, or trailside | 1.0 |
| 2nd grade | In cases where permeable pavement is used for more than 30% of the pavement area ratio or rainwater permeation facilities are installed around 70% or more of the length of the ground parking lot, roadside, and trailside | 0.8 |
| 3rd grade | In cases where permeable pavement is used for more than 25% of the pavement area ratio or rainwater permeation facilities are installed around 60% or more of the length of the ground parking lot, roadside, and trailside | 0.6 |

| | | | |
|---|---|---|---|
| 4th grade | Where water-permeable pavement is used for more than 20% of the pavement area ratio or rainwater permeation facilities are installed around 50% or more of the length of the ground parking lot, roadside, or trailside | 0.4 |
| 5th grade | Where permeable pavement is used for more than 15% of the pavement area ratio or rainwater permeation facilities are installed around 40% or more of the length of the ground parking lot, roadside, and trailside | 0.2 |

※ - Pavement area ratio: $\frac{\text{보도,광장등교통하중을크게고려하지않는곳의투수성포장면적}}{\text{보도,광장등교통하중을크게고려하지않는포장면적}} \times 100\ (\%)$

- Rainwater infiltration facility installation rate: $\frac{\text{우수침투확보길이}}{\text{전체우수관거길이}} \times 100\ (\%)$
- Total rainwater pipe length: The sum of the length of the ground parking lot, roadside, trailside, etc. where stormwater pipes can be installed and the length of the roof circumference
- Rainwater penetration secured length: Length of rainwater penetration facilities installed out of the total stormwater pipe length
- Permeable pavement: Applicable to places where traffic load is not greatly considered, such as sidewalks and plazas
- Rainwater infiltration facility: Infiltration trench, infiltration gutter, infiltration collection well, perforated pipe, etc.

Part of sewage system that infiltrates

## ■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Ministry of Construction and Transportation: Urban Planning Facility Standards Article 12 (road penetration facilities), Article 66 (public space structure and installation standards), Article 19 (8) (pedestrian-only road structure and installation standards), Article 21 (bicycle-only roads) Structure and installation standards), Article 53 (Structure and installation standards for plazas)<br>- Ministry of Government Administration and Home Affairs: Research on rainwater runoff reduction facility installation techniques ( Ⅱ, Ⅲ)<br>- Korea National Housing Corporation: Specialized housing construction specifications (civil works) |
| Documents to be submitted | - Detention facility drawing and capacity, specifications for each facility<br>- Structure diagram of rainwater infiltration facility<br>- Annual total usable rainfall, design infiltration, and design penetration strength of |

| | |
|---|---|
| | the target basin |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 2 | Energy/Resources and Environmental Load |
| evaluation category | 2-5 | management/operation |
| Evaluation standard | 2-5-1 | Feasibility and implementation of environmental management plan during construction |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | By evaluating whether reasonable guidelines for environmentally sensitive matters at the construction site are specifically specified in the relevant construction documents and a site plan that guarantees their execution is established, the environmental impact on the area adjacent to the development zone during construction is to be minimized. |
| Assessment Methods | Degree of satisfaction with related laws and industrial standards for environmentally sensitive matters at construction sites |
| points | 1 point |

Calculation standard

• Rating = (Weight by grade) × (Point distribution)

| division | Feasibility and implementation of environmental management plan during construction | weight |
|---|---|---|
| 1st grade | When specific and compulsory guidelines are included in the construction documents, goals are set for achievement, and an on-site monitoring and supervision system is in place to prove performance. | 1.0 |
| 2nd grade | When specific and compulsory guidelines are included in construction documents and there is an on-site monitoring and supervision system that proves the suitability of implementation | 0.8 |
| 3rd grade | In cases where guidelines higher than the level required by relevant laws and industrial standards are included in the | 0.6 |

| | | | |
|---|---|---|---|
| | | construction document and are specific and compulsory | |
| | 4th grade | In the event that the guidelines above the level required by relevant laws and industrial standards are included in the construction document and are specific | 0.4 |
| | 5th grade | In the event that guidelines higher than the level required by relevant laws and industrial standards are included in the construction document, but are not partially specific | 0.2 |

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Contents included in the environmental management plan:<br>Environmental Management Standards, Field Environmental Management Manager's Work Performance Guidelines, Field Environmental Impact Assessment Guidelines, Current<br>Chapter Water Quality Management Guidelines, Site Air Quality Management Guidelines, Site Noise and Vibration Management Guidelines, Site Waste Management guidelines, on-site emergency plans, general standards for on-site environmental measurement, etc.<br>- Waste management tips at construction sites<br>- Recycling guidelines for businesses discharging construction waste materials<br>- Construction method for reducing environmental load |
| Documents to be submitted | - Site environment management guidelines and plans, environment-related standards, practices and guidelines, etc. |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 2 | Energy/Resources and Environmental Load |
| evaluation category | 2-5 | management/operation |
| Evaluation standard | 2-5-2 | Adequacy of provision of operational/management documents and guidelines |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | To ensure continuous maintenance and management so that operation based on the originally intended specifications and maximum efficiency can be possible by preparing information on the operation method of the overall facilities and equipment of the building in advance |
| Assessment Methods | Evaluate whether appropriate documents are prepared for the effective operation of the building subject to audit and related equipment/facilities |
| points | 2 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Provide operation/management documents and guidelines | | weight |
|---|---|---|---|
| 1st grade | Operation for buildings subject to examination . Manuals provided for management, maintenance, repair and major facilities and equipment installation areas | If it is sufficient, the entire final construction drawing is prepared, and related instructions are prepared and kept | 1.0 |
| 2nd grade | | If it is sufficient and the final construction drawing is prepared at a sufficient level | 0.5 |

| ■ Evaluation Calculation Basis and Documents to be Submitted | |
|---|---|
| Document of proof | Building operation/management personnel must use the complete and up-to-date building operation and maintenance manual, including the following<br>- for the sequence of adjustments of all major equipment and installations with start, stop, emergency and normal operation;<br>Detailed, step-by-step instructions and checklists<br>- Detailed and step-by-step procedures and checklists for all major maintenance and repair tasks<br>- inspections derived from recommendations from manufacturers for all major equipment and systems;<br>Lubrication and maintenance. Daily preventive maintenance activity plan based on the maintenance and inspection cycle<br>- Drawings for each unit process showing equipment, duct work, piping line inspection function and location, and all difficulties<br>Controls that affect operation such as air conditioning/cooling, ventilation and air conditioning equipment, alarms and control systems<br>Detailed list of design specifications including board elements<br>- A detailed list of recent energy management control programs<br>- Manufacturer's performance data and failure detection procedure<br>- List of standard spare parts and lubricant specifications<br>- Telephone, fax and address of equipment and facility installers and maintenance personnel |
| Documents to be submitted | - Housing occupancy management work procedure - Housing defect management work procedure<br>- Apartment house facility management guidelines - Manuals, electrical and equipment manuals, etc. |

<table>
<tr><th colspan="2">Green Building Certification Criteria</th></tr>
<tr><td>evaluation section</td><td>2 Energy/Resources and Environmental Load</td></tr>
<tr><td>evaluation category</td><td>2-5 management/operation</td></tr>
<tr><td>Evaluation standard</td><td>2-5-3 Provide user manual</td></tr>
<tr><td colspan="2">■ Evaluation criteria</td></tr>
<tr><td>evaluation purpose</td><td>Information on how to manage and operate the building and user manuals related to it are provided to the occupants so that the operation based on the maximum efficiency as originally intended is possible.</td></tr>
<tr><td>Assessment Methods</td><td>Evaluation based on whether user manuals are provided to tenants</td></tr>
<tr><td>points</td><td>1 point</td></tr>
<tr><td>Calculation standard</td><td>• Rating = (Weight by grade) × (Point distribution)
<table>
<tr><th>division</th><th colspan="2">Provide user manual</th><th>weight</th></tr>
<tr><td>1st grade</td><td rowspan="2">User Manual for Buildings to be Reviewed</td><td>When provided</td><td>1.0</td></tr>
<tr><td>2nd grade</td><td>When not provided</td><td>0</td></tr>
</table>
※ The user manual includes operation manuals of major equipment and systems and failure detection procedures should be included</td></tr>
<tr><td colspan="2">■ Evaluation Calculation Basis and Documents to be Submitted</td></tr>
<tr><td>Document of proof</td><td>- Energy-saving and environmental load-reducing operation manuals and failure detection procedures for major equipment and systems in households, etc.</td></tr>
</table>

| | |
|---|---|
| Documents to be submitted | – User Manual |

| Green Building Certification Criteria | |
|---|---|
| evaluation section | 2 Energy/Resources and Environmental Load |
| evaluation category | 2-5 management/operation |
| Evaluation standard | 2-5-4 Feasibility of adopting information and communication and advanced living facilities |
| ■ Evaluation criteria | |
| evaluation purpose | Evaluate whether high-speed information communication facilities and high-tech living facilities such as Internet living contents/networks can be adopted in the residential space within the household to enable the use of advanced information and communication and modern life in the future. |
| Assessment Methods | Evaluate high-tech life facilities such as high-speed information communication facilities and Internet living contents/network according to whether they are adopted or not |
| points | 3 points |
| Calculation standard | • Rating = X + Y<br>X: 2 points when high-speed information communication facility is installed at the 1st grade level or higher, 1 point when installed at the 1st grade level or higher<br>Y: 1 point when planning to provide Internet life contents/network<br>However, in the case of internet living content/network provision, it is recognized if it is applied and installed in more than 2/3 of the total households |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Ministry of Information and Communication 'high-speed information communication building certification system' |

| | |
|---|---|
| Documents to be submitted | - High-speed information communication certificate<br>- Conceptual blueprint for building telecommunication facilities<br>- Guidelines for prospective tenants regarding plans to provide Internet living information contents/network, etc.<br>- Details of building telecommunication facilities |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 3 | ecological environment |
| evaluation category | 3-1 | Utilization of natural resources |
| Evaluation standard | 3-1-1 | Topsoil recycling rate |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Evaluate the recycling of topsoil in the planting area to promote the maintenance of the natural ecosystem |
| Assessment Methods | This applies to cases where the complex's topsoil is recycled to the planting area, compared to the total amount of topsoil<br>Calculate and evaluate the percentage (%) of recycled topsoil used for planting ground |
| points | 1 point |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br><br>※ Topsoil recycling rate (V) = X ÷ Y × 100<br>topsoil recycling plan ' submitted by the applicant ( ㎥)<br>Y: Total amount of topsoil, site area ( ㎡) × 0.15m ( topsoil is based on 15cm of soil depth) |

| division | Topsoil Recycling Rate (V) | weight |
|---|---|---|
| 1st grade | V≥40% | 1.0 |
| 2nd grade | 30% ≤ V < 40% | 0.8 |
| 3rd grade | 20% ≤ V < 30% | 0.6 |

| | | |
|---|---|---|
| 4th grade | 10% ≤ V < 20% | 0.4 |
| 5th grade | 5% ≤ V < 10% | 0.2 |

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - A Study on Policies and Systems for Sustainable Settlement Development ( Ⅲ ), Ministry of Construction and Transportation, 2000<br>- Preservation of natural soil, topsoil preservation and utilization in 'Eco-friendly Building Design Guidelines'<br>- Environment-friendly site planning techniques; Korea Land Corporation |
| Documents to be submitted | - Topsoil recycling plan (including topsoil management plan during construction)<br>- Related specifications and drawings<br>- Attached documents for personal authentication: photo proof of topsoil recycling (before, during, after) or video tape<br>Topsoil utilization ledger |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 3 | ecological environment |
| evaluation category | 3-2 | Creation of green space |
| Evaluation standard | 3-2-1 | Application of artificial environment greening techniques considering the ecological environment |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | In order to alleviate the unpleasant scenery caused by various structures, ecological environment was considered.<br>Induce the application of various greening methods (roof greening, retaining wall greening, natural restoration type slope, etc.) |
| Assessment Methods | For each construction method, a weight is calculated considering the application area and difficulty, etc., and reflected in the distribution of points. |
| points | 4 points |

**Calculation standard**

Rating: Calculated by formula for each applied method

▣ Types of applied construction methods

| division | Applied method | formula | maximum score | note |
|---|---|---|---|---|
| Retaining wall replacement recording | Natural Restoration Type of Slope | Y = 0.025X | 1.0 | Y: Rating X: Composition rate<br>X = (composition area ÷ target area) × 100 ( %) |
| artificial ground | Roof greening/roof | Y = 0.025X | 1.0 | * The minimum area for each construction method is |

| | | | | |
|---|---|---|---|---|
| recording | greening | | | 100 ㎡. |
| Elevation recording | wall greening | Y' = 0.02X | 2.0 | |
| | Fence greening | Y' = 0.02X | | |
| | Retaining wall greening | Y' = 0.02X | | |

※ - The maximum for each elevation greening method is 1 point, and the total sum of all elevation greening methods is a maximum of 2 points.

- The quality level is reflected in the evaluation based on the drawings and instructions for each construction method

- In addition, according to the judgment of the evaluators, it is an eco-friendly greening method considering the ecological environment.

Points can be awarded if approved

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Landscaping plan and design guidelines, Korea National Housing Corporation<br>- Ecological city creation technology development project, National Environmental Research Institute, 1997 |
| Documents to be submitted | - Application plan for eco-friendly planning elements (specify the target area and application area)<br>- Landscaping planting plan<br>- Detailed drawings related to environment-friendly planning elements |

| Green Building Certification Criteria | |
|---|---|
| evaluation section | 3 ecological environment |
| evaluation category | 3-2 Green space within the complex |
| Evaluation standard | 3-2-2 green space rate |
| ■ Evaluation criteria | |
| evaluation purpose | Induce the creation of more green spaces within the complex by evaluating the area ratio of green spaces such as hills, grasslands, and planting spaces |
| Assessment Methods | Identification of green area by drawing and floor plan |
| points | 5 points |
| Calculation standard | • Calculation formula: Y= 1 + (X-5)/5 (Y: rating, X: legal excess percentage (%))<br>- When up to 25%: 5 points<br>- Scores are given when the amount is 5% higher than the legal standard<br><br>※ Green space area = site area - (building area, road area, sidewalk area, children's playground, parking lot, sports facility, rest area, underground water tank, sewage treatment facility, kindergarten, parking lot stairs, underground parking lot ramp, ventilation area, etc.) |

| | |
|---|---|
| | |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Building Act Article 32<br>- Regulations on Housing Construction Standards, etc. Article 29<br>- Policy and Institutional Research for Sustainable Settlement Development Ⅲ, Ministry of Construction and Transportation, 2000 |
| Documents to be submitted | - Green space area calculation table<br>- Business approval details |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 3 ecological environment |
| evaluation category | 3-2 Green space within the complex |
| Evaluation standard | 3-2-3 Creation of linked green belts |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Evaluate whether it is connected to the biotope outside the complex and create a continuous green space inside the complex |
| Assessment Methods | The ratio between the length of the green axis in the complex and the sum of the long and short widths of the complex<br>The score evaluated by calculating the weight for the<br>A score is given by adding the score that evaluates the presence or absence of functionality as an ecological axis in connection with |
| points | 2 points (Internal evaluation of the complex: 1 point, evaluation of connectivity with external green spaces: 1 point) |
| Calculation standard | 1) Creation of a continuous green axis within the complex (weighted by grade) × (1 point) |

| division | Green axis composition rate (L) | weight | note |
|---|---|---|---|
| 1st grade | L≥ (1/4)*A | 1.0 | L: created green area<br>shaft length<br>A: The perimeter length of the complex |
| 2nd grade | (1/4)*A > L ≥ (1/6)*A | 0.75 | |
| level 3 | (1/6)*A > L ≥ (1/8)*A | 0.5 | |
| 4th grade | (1/8)*A > L ≥ (1/10)*A | 0.25 | |

2) Connectivity with green spaces outside the complex (weight) × (1 point)

| Degree of connectivity with the green area outside the complex | weight |
|---|---|
| The green axis is connected to the external green axis or biotope by an ecological passage of 8m or more. | 1.0 |
| The green axis is connected to the external green axis or biotope by an ecological passage of 4m or more. | 0.5 |

※ Recognized range of green belt axis

- The minimum width must be 4m or more
- Created with multi-layered planting and high-quality soil growth environment (vegetation, topography, water resources, etc.)

A green space created with a structure that allows living organisms to live and move

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - A Study on Policies and Systems for Sustainable Settlement Development ( Ⅲ ), Ministry of Construction and Transportation, 2000<br>- Ecological city creation technology development project, National Environmental Research Institute, 1997 |
| Documents to be submitted | - Complex layout with green axis and eco-bridge expressed<br>- Design description (indicate the width of the short and long sides of the complex and the length of the green axis)<br>- Detailed drawing of green axis and ecological connection |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 3 ecological environment |
| evaluation category | 3-3 Habitat creation |
| Evaluation standard | 3-3-1 Aquatic Biotope Composition |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The purpose is to improve the quality level of the ecological environment in the residential complex by evaluating the area and construction technique of the aquatic biotope. |
| Assessment Methods | Calculate the rating by calculating the formula and weight for the detailed items related to the area and technique<br>and sum each rating |
| points | 3 points |

**Calculation standard**

Aquatic biotope (3 points = 2 points for area of construction + 1 point for construction technique)

① Establishment area calculation criteria (2 points awarded)

| Details | formula | maximum score | Biotope accreditation scope |
|---|---|---|---|
| Scores are given continuously according to the composition ratio compared to the site area (When created on the upper part of the natural ground) | Y=2.0X | 2.0 | - The minimum area is based on 50㎡<br>- Biotope in composition technique<br>Components, (vegetation, section, floor treatment)<br>If they are reflected<br>- Y: rating, X: composition ratio<br>X = (composition area ÷ site area) × 100 ( %) |
| Scores are given continuously according to | Y=1.5X | 1.5 | |

| | | | |
|---|---|---|---|
| the composition ratio compared to the site area (When created on top of artificial ground) | | | |

② Composition technique evaluation criteria (1 point awarded)

| division | Details | weight | related elements |
|---|---|---|---|
| supply of water | Rainwater or heavy water use | 0.2 | Utilize rainwater storage tanks, sedimentation tanks, etc. |
| planting plan | Suitability of tree species selection | 0.2 | Dietary plants, aquatic plants, multi-layer planting wild plants, etc. |
| | planting technique | 0.2 | |
| cross section structure | floor treatment | 0.2 | Possibility of living organisms |
| | revetment treatment | 0.2 | |

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - A Study on Policies and Systems for Sustainable Settlement Development ( Ⅲ ), Ministry of Construction and Transportation, 2000<br>- Guidelines for creating an ecological pond to bring nature to the city, Ministry of Environment<br>- Landscaping plan and design guidelines, Korea National Housing Corporation<br>- Ecological city creation technology development project, National Environmental Research Institute, 1997<br>- Research on water-friendly complex planning techniques, Korea Land Corporation |
| Documents to be submitted | - Water supply and drainage treatment plan (rainwater utilization plan) / site plan / design manual<br>- Detailed biotope drawing (cross-sectional view) / Basis for biotope area calculation / Detailed planting plan drawing (size, quantity expression) |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 3 ecological environment |
| evaluation category | 3-3 Habitat creation |
| Evaluation standard | 3-3-2 Formation of terrestrial biotope |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The purpose is to improve the quality level of the ecological environment in the residential complex by evaluating the area and construction technique of the terrestrial biotope. |
| Assessment Methods | Calculate the rating by calculating the formula and weight for the detailed items related to the area and technique<br>and sum each rating |
| points | 3 points |

**Calculation standard**

Terrestrial Biotope (3 points = 2 points for area of construction + 1 point for construction technique)

① Establishment area calculation criteria (2 points awarded)

| Details | formula | maximum score | Biotope accreditation scope |
|---|---|---|---|
| Scores are given continuously according to the composition ratio compared to the site area (When created on the upper part of the natural ground) | Y=2.0X | 2.0 | - The minimum area is based on 100㎡<br>- Density according to local government ordinance<br>More than 1.5 times the planting density<br>- In case the components (vegetation structure, soil environment) are reflected<br>- Y: rating, X: composition ratio<br>X = (composition area ÷ site area) × 100 ( %) |
| Scores are given continuously according to the composition ratio | Y=1.5X | 1.5 | |

| | | | |
|---|---|---|---|
| compared to the site area (When created on top of artificial ground) | | | |

② Composition technique evaluation criteria (1 point awarded)

| division | Details | weight | related elements |
|---|---|---|---|
| planting plan | Suitability of tree species selection | 0.2 | Dietary tree species, ground cover<br>Multi-layer planting |
| | planting technique | 0.2 | |
| floor treatment | Possibility of biohabitability | 0.4 | soil ecology;<br>Hardness, voids, high-quality soil, etc. |
| Etc | Linkage with aquatic biotope, etc. | 0.2 | |

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - A Study on Policies and Systems for Sustainable Settlement Development ( Ⅲ ), Ministry of Construction and Transportation, 2000<br>- Guidelines for creating an ecological pond to bring nature to the city, Ministry of Environment<br>- Landscaping plan and design guidelines, Korea National Housing Corporation<br>- Ecological city creation technology development project, National Environmental Research Institute, 1997<br>- Research on water-friendly complex planning techniques, Korea Land Corporation |
| Documents to be submitted | - Complex planning map/ Basis for terrestrial biotope area calculation<br>- Design instructions (local government planting ordinance and target biotope planting density (planting quantity/ ㎡ ) indicated)<br>- Planting detail drawing (size and quantity indication) / detailed plan drawing (section and sketch) |

| Green Building Certification Criteria | |
|---|---|
| evaluation section | 4 indoor environment |
| evaluation category | 4-1 air environment |
| Evaluation standard | 4-1-1 Use of materials with low emission of volatile organic substances |
| ■ Evaluation criteria | |
| evaluation purpose | Since volatile organic substances emitted into the air from the main indoor finishing materials directly affect the health of residents, the purpose of this study is to induce the use of materials with low emission of volatile organic substances. |
| Assessment Methods | Evaluation of emission of volatile organic substances from building finishing materials and use of UFFI |
| points | 3 points |
| Calculation standard | . Calculated from (weight ① × 1) + (weight ② × 2)<br>. weight :<br>① Whether to use UFFI:<br>When in use (0), when not in use (1)<br>② Weight by number of products below the emission standard of volatile organic substances<br>1 material (0.25), 2 materials (0.5), 3 materials (0.75), 4 or more materials (1)<br>- General materials: TVOCs less than 0.4 mg/m2 h, formaldehyde less than 0.125 mg/m2 h<br>However, in the case of wallpaper and wooden products, they are recognized even if they satisfy the criteria below.<br>mg/ℓ of formaldehyde (KSM 7305)<br>- Wooden products: Formaldehyde average less than 5 mg/ℓ , maximum less than 10 |

| | |
|---|---|
| | mg/ℓ (KSF 3101)<br>* UFFI : Urea Formaldehyde Foam Cavity Insulation<br>* TVOCs: Sum of 10 substances with high emissions as a result of analysis<br>* Institutions specializing in quality inspection: National or public testing institutes, persons designated by the Ministry of Construction and Transportation or the Minister of Environment<br>* Chamber test: Volatile organic substance emission test conducted in a chamber that can create an environment similar to that of a room. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - UFFI : BS 8208, 5617, 5618<br>- M1 Classification, Finland<br>- ECA Report No.8 (Guideline for characterization of Volatile Organic Compounds Emitted from Indoor Materials and products Using Small Test Chamber)<br>- Chamber test Experiment conditions: temperature (23±2 ℃ ), humidity (50±3%), VOCs (Tenax Tube, GC/MS), Formaldehyde (DNPH-Catridge, HPLC) |
| Documents to be submitted | - Documents specifying the use regulations of UFFI<br>- Test report related to emission of volatile organic substances, application part expression book |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 4 indoor environment |
| evaluation category | 4-1 air environment |
| Evaluation standard | 4-1-2 Degree of natural ventilation design |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | It aims to provide controllable and fresh outside air to occupants. |
| Assessment Methods | Evaluate the presence or absence of ventilation openings or devices and the degree of ventilation design |
| points | 3 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution) |

| division | Existence of ventilation openings or devices and degree of ventilation design | weight |
|---|---|---|
| 1st grade | Class 4 + Heat exchange function and controllable vents or devices are installed in each room | 1.0 |
| 2nd grade | Class 4 + Controllable vents or devices installed in living rooms and kitchens | 0.8 |
| 3rd grade | Class 4 + Controllable vents or devices installed in the living room or kitchen | 0.6 |
| 4th grade | If the area of the window that can be opened and closed is more than 15% of the floor area | 0.4 |
| 5th grade | If the area of the window that can be opened is more than 10% of the floor area | 0.2 |

| | |
|---|---|
| | ※ Area ratio of windows that can be opened and closed: Sum of windows that can be opened and closed in all units / Sum of floor areas in all units (excluding toilet/bathroom, front room and storage space) |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Controllable vents or devices:<br>Installed on a wall, window frame, or window glass facing outdoor air, it is an appliance or device that can introduce the necessary amount of outdoor air without opening the window (minimizing energy consumption for heaters). Automatically open and close, must be insect repellent |
| Documents to be submitted | - Window detail drawing, openable window area ratio calculation sheet<br>- Relevant blueprints and system diagrams, product manuals |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 4 indoor environment |
| evaluation category | 4-2 thermal environment |
| Evaluation standard | 4-2-1 Adoption of automatic temperature control system for each room |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | The purpose is to create a pleasant indoor heating environment and save energy by evaluating whether or not to adopt an automatic temperature controller for each room. |
| Assessment Methods | Application rate of automatic thermostat for each room or heating zone |
| points | 3 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution)<br><br>※ Ratio of households with automatic temperature control system applied by room or heating zone (V) = X ÷ Y × 100<br>X: Number of households with automatic temperature control system for each room or heating zone<br>Y: total number of households |

| division | Percentage of households with automatic temperature control system for each room or heating zone | weight |
|---|---|---|
| 1st grade | V = 100% | 1.0 |
| 2nd grade | 80% ≤ V < 100% | 0.8 |

| | | |
|---|---|---|
| 3rd grade | 60% ≤ V < 80% | 0.6 |
| 4th grade | 40% ≤ V < 60% | 0.4 |
| 5th grade | 20% ≤ V < 40% | 0.2 |

- In case a separate indoor thermostat is installed for each room or heating zone, and All cases where a temperature sensor is installed in each room and an integrated thermostat is installed in a specific room
admit
- For heating zones (living room, bedroom, kitchen).

■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Building energy saving design standards (Notice No. 2001-118 of the Ministry of Construction and Transportation) |
| Documents to be submitted | - Relevant design drawing, application household ratio calculation<br>- Applied control system diagram<br>- Product manual for temperature control system for each room |

# Green Building Certification Criteria

| | | |
|---|---|---|
| evaluation section | 4 | indoor environment |
| evaluation category | 4-4 | sound environment |
| Evaluation standard | A-4-1 | Level of sound insulation performance of boundary walls between households |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | Evaluate the ability to block noise transmitted from neighboring households by walls and noise transmitted from one's own household to neighboring households among the acoustic performance, which is one of the factors for securing a comfortable living space (evaluate the performance of blocking air transmission between households) |
| Assessment Methods | Real-time sound pressure level difference measurement result or design drawing according to Korean Industrial Standards (KS F 2809)<br>Evaluation from wall structure (in case of reinforced concrete retaining wall) thickness |
| points | 3 points |

**Calculation standard**

**Rating = (weight by grade) × (point distribution)**

※ Either 1) or 2) is applied as an advantageous item in evaluation

1) Evaluation by sound pressure level difference of Korean Industrial Standards (KS F 2809) [ Unit: dB]

| division | Octave band center frequency [Hz] | | | | | weight |
|---|---|---|---|---|---|---|
| | 125 | 250 | 500 | 1000 | 2000 | |
| 1st grade | over 40 | 47.5 or higher | 55 or more | over 60 | over 65 | 1.0 |
| 2nd grade | 35 or more | 42.5 or higher | 50 or more | 55 or more | over 60 | 0.75 |
| level 3 | 30 or more | 37.5 or | over 45 | 50 or more | 55 or more | 0.5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | higher | | | | |

2) Evaluation based on the boundary wall structure (however, it is applied in the case of a reinforced concrete retaining wall)

| division | Thickness of boundary wall between households (T) | weight |
|---|---|---|
| 1st grade | T ≥ 250 mm | 1.0 |
| 2nd grade | 200mm ≤ T < 250mm | 0.75 |
| level 3 | 150mm ≤ T < 200mm | 0.5 |

## ■ Evaluation Calculation Basis and Documents to be Submitted

| | |
|---|---|
| Document of proof | - Designation standards for sound insulation structures of walls (Ministry of Construction and Transportation Notice No. 1995-191, '95.6.9)<br>- Industrialized housing performance and production standards (Article 13 of the Housing Construction Standards Regulations)<br>- Boundary walls between households, etc. (Regulations on Housing Construction Standards, etc. Article 14)<br>- Field measurement method for air transmission sound blocking performance (Korean Industrial Standard KS F 2809-2001)<br>- Mura Ishiki, "Space-Speech Performance Test", (Japan) 1995.04 |
| Documents to be submitted | - Design drawing: Indicate the structure of the boundary wall between households<br>- Results of on-site measurement of sound insulation performance of walls (KOLAS: National Authorized Testing Institute)<br>Request for specification of measurement location, measurement outline, measurement institution and method, etc.<br>※ If you want to be evaluated based on the calculation standard 2), you do not have to separately submit the measurement results of the sound insulation performance of the boundary wall. |

# Green Building Certification Criteria

| | |
|---|---|
| evaluation section | 4 indoor environment |
| evaluation category | 4-5 indoor greening |
| Evaluation standard | 4-5-1 Balcony Green Space Ratio |

■ Evaluation criteria

| | |
|---|---|
| evaluation purpose | By evaluating the area of balcony green space, we aim to provide residents with a healthy green environment and nature-friendly space. |
| Assessment Methods | Evaluated according to the composition ratio of balcony green space to the total balcony area |
| points | 2 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution)<br><br>※ Green space composition ratio (V) = X ÷ Y × 100<br>X: Sum of balcony green space areas in the main lighting direction (main opening) of all households subject to evaluation<br>Y: Sum of balconies on the walls in the main lighting direction (main opening) of all households subject to evaluation |

| division | Ratio of green space composition | weight |
|---|---|---|
| 1st grade | V≥25% | 1.0 |
| 2nd grade | 20% ≤ V < 25% | 0.8 |
| 3rd grade | 15% ≤ V < 20% | 0.6 |

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|---|---|
| | ※ Recognition scope of green space<br>1) Make the balcony a yard-type balcony that can be planted and provide drainage facilities<br>2) Applied to balconies installed on the wall (main opening) of the main lighting direction<br>3) Evaluated based on the entire generation subject to evaluation |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Calculation method of area and height (Article 19 of the Enforcement Decree of the Building Act)<br><br><Balcony Green Space Type><br>- Living room entry type with a yard<br>- Simple flower bed type, etc. |
| Documents to be submitted | - Unit household floor plan (by floor plan)<br>- Balcony green space related drawings and detailed drawings<br>- Balcony Green Area Ratio Calculation Statement (calculation process presented) |

| Green Building Certification Criteria | |
|---|---|
| evaluation section | 4 indoor environment |
| evaluation category | 4-5 indoor space |
| Evaluation standard | 4-5-2 Adequacy of care for the elderly and the disabled |
| ■ Evaluation criteria | |
| evaluation purpose | Evaluate the extent to which barrier-free design is reflected in preparation for the physical decline and disability of the elderly and handicapped in the household, and the ease of installation of parts for the elderly or remodeling according to the age of residents in the household. |
| Assessment Methods | Evaluated according to the design level considering the elderly/disabled |
| points | 1 point |
| Calculation standard | • In case the basic legal requirements are satisfied, but facilities for the elderly/disabled are installed in each building with 6 or more of the examples below (others are also accepted) ▶ 1 point<br><br>※ Examples of techniques for caring for the elderly/disabled<br><br>- Securing the effective width of common corridors (more than 1.4 meters)<br>- Continuous handrail (Handrails must be provided on both sides of the stairs. At this time, the handrails should be extended at least 30cm in the horizontal direction without stopping or ending suddenly, so that they are continuous without breaking even at the landing.)<br>- Elimination of step differences (building entrance-entrance and exterior are at the same level, internal threshold-20mm or less)<br>- Non-slip bottom<br>- Wall edge obtuse processing |

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|---|---|
| | - Securing the effective width of the elevator (more than 1.1 meters in width, more than 1.4 meters in depth, and more than 0.9 meters in effective passage width of the door)<br>- Securing the effective width of the door (more than 0.9m, horizontal stop surface of 1.5×1.5m before and after the door)<br>- Securing stair landing space (more than 1.5m)<br>- Low bathtub height (less than 0.4m)<br>- Possible to open and close the toilet lock from the outside |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Research on housing types and design guidelines for senior residents, Korea National Housing Corporation Housing Research Institute, 1996.9<br>- Ministry of Health and Welfare: Enforcement Rules of the Act on Convenience Enhancement Guarantee for the Disabled, Elderly, and Pregnant Women<br>- Tokyo Welfare Street Creation Ordinance Facility Maintenance Guidelines, 1995 |
| Documents to be submitted | - Floor plans/details to explain the barrier-free design of the building<br>- Product manual/specification that can explain facility functions for the elderly |

# Green Building Certification Criteria

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|---|---|
| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-1 just my environment |

■ Evaluation criteria

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|---|---|
| evaluation purpose | Evaluation of the degree of establishment of appropriate soundproofing measures to block sound environment caused by noise sources outside various buildings (complexes) such as traffic noise and noise flowing into the complex |
| Assessment Methods | Evaluated by comparing with environmental standards (Article 4 of the Enforcement Decree of the Framework Act on Environmental Policy) based on the noise level evaluation result on the environmental impact assessment report (noise field) of the complex or the submission of a separate noise level (prediction) evaluation report |
| points | 3 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution)<br><br>※ Evaluation value (L) = Environmental standard − Evaluation noise level<br><br>Note 1) The evaluation noise level is the point in the complex where damage due to noise is most concerned (site boundary,<br>It is based on the noise level at the point 1m in front of the window of the household, etc.).<br>Note 2) Evaluation is divided into daytime (06:00~22:00) and nighttime (22:00~06:00) time zones, and the average of each score calculated is the final score. |

| division | Evaluation value (L) | weight |
|---|---|---|
| 1st grade | L ≥ 10 dB(A) | 1.0 |

| | | | |
|---|---|---|---|
| | 2nd grade | 8 dB(A) ≤ L < 10 dB(A) | 0.8 |
| | 3rd grade | 6 dB(A) ≤ L < 8 dB(A) | 0.6 |
| | 4th grade | 4 dB(A) ≤ L < 6 dB(A) | 0.4 |
| | 5th grade | 2 dB(A) ≤ L < 4 dB(A) | 0.2 |

| ■ Evaluation Calculation Basis and Documents to be Submitted | |
|---|---|
| Document of proof | - Environmental standards (Article 10 of the Framework Act on Environmental Policy and Article 2 of the Enforcement Decree of the same Act)<br>- Protection from noise, etc. (Regulations on Housing Construction Standards, Article 9)<br>- Soundproof wall performance and installation standards (Ministry of Environment Notice No. 1998-150, '99.1.6)<br>- Regulations on the preparation of environmental impact assessments (Ministry of Environment Notice No. 2001-7, '01.1.29) |
| Documents to be submitted | . Environmental impact assessment report (noise assessment part)<br>Noise level evaluated in accordance with the Regulations on Environmental Impact Assessment (Ministry of Environment Notice No. 2001-7, January 29, 2001)<br>Evaluation process and evaluation result submission<br>. Submission of noise level prediction evaluation results in the complex<br>1) In case there is no environmental impact assessment<br>2) If the forecast conditions at the time of the environmental impact assessment (soundproof facility plan, building layout plan, traffic volume, etc.) are changed<br>※ Overview of the theory or computer program used in the prediction, prediction conditions (surrounding noise sources and location of the complex,<br>Traffic volume conditions, location and height of soundproof facilities, etc.),<br>Prediction agency, prediction evaluator (provided, that the prediction evaluator is recognized if it is a high-level engineer in the field of environment (noise and vibration) or a person with equivalent or higher qualifications), etc., along with the prediction results |

# Green Building Certification Criteria

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| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-2 use of alternative energy |

■ Evaluation criteria

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| evaluation purpose | The use of alternative energy can reduce the use of fossil fuels and thereby reduce greenhouse gas emissions. However, since there is no economic feasibility at the current level, it is not easy to utilize alternative energy. Therefore, this item is evaluated in terms of recommending and encouraging the use of alternative energy. |
| Assessment Methods | Scores are awarded according to the size and availability of alternative energy facilities |
| points | 3 points |

Calculation standard

• Rating = (Weight by grade) × (Point distribution)

| division | Use of alternative energy | weight |
|---|---|---|
| 1st grade | If 5% or more of the total number of households use alternative energy to handle 20% or more of the domestic hot water load, or the equivalent amount is used for heating | 1.0 |
| 2nd grade | to less than 5% of the total number of households use alternative energy to handle 20% or more of the domestic hot water load, or the equivalent amount is used for heating load | 0.5 |
| 2' class | In cases where alternative energy is used for more than 20% of the hot water supply load of the welfare center in the complex and more than 20% of common lighting such as streetlights | 0.5 |

※ Alternative energy refers to solar energy, other than oil, coal, nuclear power,

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|---|---|
| | and natural gas, as defined in the "Alternative Energy Development, Use, and Distribution Promotion Act." |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Daily average hot water supply load of multi-unit dwellings: 12,000kcal/day (based on 4 people)<br>- Daily average solar radiation in winter: 3,000kcal/ ㎡ day (Seoul standard)<br>- 59㎡ (24 pyong) apartment building area for installation of solar panels: 4 ㎡<br>4㎡ heat collector in a 59 ㎡ apartment house = 3,960kcal/day<br>of alternative energy to hot water load in 59㎡ apartment house: 33%<br><br>- References<br>. Mechanical Facility Design Handbook, Korea National Housing Corporation, 1999<br>. Standard drawing of apartment house, Korea National Housing Corporation, 2001<br>. Domestic insolation analysis evaluation and data standardization, Ministry of Commerce, Industry and Energy, 1998 |
| Documents to be submitted | - Alternative energy utilization facility installation plan and design drawing<br>- Heating and domestic hot water load bill |

# Green Building Certification Criteria

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| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-3 gray water installation |

■ Evaluation criteria

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| evaluation purpose | By treating used tap water and recycling it as living water, etc., water resources can be saved, pollution load to public waters can be reduced, and sewage treatment facility costs can be reduced. |
| Assessment Methods | The gray water produced by the installation of gray water treatment for used tap water is used as water for sprinkling, landscaping, etc.<br>Evaluate whether furnace utilization facilities are installed |
| points | 4 points |
| Calculation standard | • Rating = (Weight by grade) × (Point distribution)<br><br>※ Gray water usage rate (V) = X ÷ Y × 100<br>X: Gray water consumption (suitable for gray water quality standards) by the gray water facility of the building subject to examination<br>Y: Total number of multiples generated by the building subject to examination (Based on the amount of water used in the building to be reviewed, if there is any other amount, add it) |

| division | Heavy water utilization (V) | weight |
|---|---|---|
| 1st grade | V ≥ 10% | 1.0 |
| 2nd grade | 8% ≤ V < 10% | 0.75 |
| 3rd grade | 6% ≤ V < 8% | 0.5 |

<table>
<tr><td></td><td>
<table>
<tr><td>4th grade</td><td>4% ≤ V < 6%</td><td>0.25</td></tr>
</table>
※ Criteria for use: In the case of using outdoor water for washing/cleaning, sprinkling, landscaping, etc. according to the criteria for gray water facilities, or using water for flush toilets, car washing/cleaning, or landscaping in public facilities in complexes such as welfare centers corresponding
</td></tr>
<tr><td colspan="2">■ Evaluation Calculation Basis and Documents to be Submitted</td></tr>
<tr><td>Document of proof</td><td>- Ministry of Environment: Article 11 of the Water Supply Act (recycled water supply), Article 2 of the Enforcement Rule of the Water Supply Act (recycled water supply facility standards)<br>Article 3 of the Enforcement Rules of the Waterworks Act (water quality standards for gray water),<br>Article 4 of the Enforcement Rule of the Waterworks Act (support for installers of gray water supply)<br><br>Definition of terms according to gray water quality standards:<br>1. "Sprinkling water" refers to gray water used for sprinkling in the case of road cleaning work or construction work.<br>2. "Landscaping water" refers to gray water used for artificial ponds, artificial waterfalls, artificial rivers and fountains in housing complexes, etc.<br>However, in this evaluation item, irrigation water is included in landscaping water.</td></tr>
<tr><td>Documents to be submitted</td><td>- Gray water facility drawing<br>- Heavy water specifications</td></tr>
</table>

| Green Building Certification Criteria | |
|---|---|
| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-4 Conservation rate of existing natural resources |
| ■ Evaluation criteria | |
| evaluation purpose | Create an environment that can coexist with nature by minimizing the destruction of nature due to the development of residential complexes from the initial planning stage and providing good ecological resources to residents |
| Assessment Methods | The conservation area of the existing natural resources (vegetation, topography, water resources, etc.) within the complex is summed up and evaluated as a ratio to the site area, and for point factors that cannot be measured by area, a weight corresponding to the area is given. |
| points | 3 points |
| Calculation standard | • Rating = 0.3 × Natural Resources Conservation Rate (%)<br><br>※ Natural resource conservation rate (%) = (existing natural resource conservation area ÷ land area) × 100<br><br>① This applies to cases where natural resources (ecological resources such as forests, hills, streams, lakes, etc.) within the complex are conserved and planned. counted continuously<br>② Point factors in natural resources include those for which area standards are difficult to apply, such as protected trees and tall trees, and are weighted at 3% (0.9 points) of the site area |

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| | ※ Section ① The sum of ② shall be 3 points or less, which is the maximum score. |
| ■ Evaluation Calculation Basis and Documents to be Submitted | |
| Document of proof | - Policy and institutional research for sustainable settlement development ( Ⅲ ) ; Ministry of Construction and Transportation<br>- Investigation of cases of housing site development in mountainous and hilly areas and planning criteria; Korea National Housing Corporation Housing Research Institute (2001.3)<br>- Eco-city creation technology development project; National Environmental Research Institute (1997.6) |
| Documents to be submitted | - Existing natural resource conservation plan and conservation area calculation table<br>- Environmental Impact Assessment Statement |

# Green Building Certification Criteria

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|---|---|
| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-5 Interfloor Boundary Floor Stair Sound Blocking Performance Level |

■ Evaluation criteria

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| evaluation purpose | Evaluate the ability to block impact sound transmitted to the next generation through the floor structure among the acoustic performance, which is one of the factors to secure a comfortable living space<br>(Evaluation of floor impact sound blocking performance between upper and lower floors) |
| Assessment Methods | Evaluation from the measurement results of floor impact sound blocking performance according to Korean Industrial Standards (KS F 2810-1/2)<br>(Light impact sound includes the equivalent sound absorption capacity correction result of the sound receiving room) |
| points | **3 points** (Light impact sound: 1.5 points, heavy impact sound: 1.5 points) |
| Calculation standard | Rating = lightweight impact sound score + heavy impact sound score<br>1) Performance evaluation standard of lightweight floor impact sound [ Unit: dB] |

| division | Octave band center frequency [Hz] | | | | | value |
|---|---|---|---|---|---|---|
| | 125 | 250 | 500 | 1000 | 2000 | |
| 1st grade | 68 or less | 61 or less | 55 or less | 52 or less | 51 or less | 1.0 |
| 2nd grade | below 73 | 66 or less | 60 or less | 57 or less | 56 or less | 0.75 |
| level 3 | 78 or less | 71 or less | 65 or less | 62 or less | 61 or less | 0.5 |

2) Performance evaluation standard for heavy floor impact sound [ Unit: dB]

| division | Octave band center frequency [Hz] | | | | weight |
|---|---|---|---|---|---|
| | 63 | 125 | 250 | 500 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 1st grade | 63 or less | below 53 | 46 or less | 40 or less | 1.0 |
| | 2nd grade | 68 or less | 58 or less | 51 or less | 45 or less | 0.75 |
| | level 3 | below 73 | 63 or less | 56 or less | less than 50 | 0.5 |

■ Evaluation Calculation Basis and Documents to be Submitted

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|---|---|
| Document of proof | - Industrialized housing performance and production standards (Article 13 of the Housing Construction Standards Regulations)<br>- On-site measurement method for floor impact sound blocking performance (Korean Industrial Standard KS F 2810-1/2, 2001)<br>- A Study on Establishing Noise Standards in Apartment Houses Ⅰ, Korea National Housing Corporation, 1990<br><br>* The room to be measured is applied to the room with the largest floor area among the target equilibrium. Therefore, in general, the living room is the principle, but the master bedroom is also recognized with a grace period in consideration of the difficulties in measurement conditions. (However, it is limited to cases where the area of the main bedroom is within ±20% of the area of the living room)<br>* The design of the household and structure type to be evaluated and the floor composition layer (from slab to final finishing material)<br>If the same and the area of the measurement room is within ±20% of the living area of the household subject to examination, other sites<br>The measurement results in . |
| Documents to be submitted | - Design drawing: Cross-section and detailed drawing of the standard floor (ondol) floor structure<br>- On-site measurement results of floor impact sound blocking performance (KORAS: National Authorized Testing Institute)<br>Request for specification of measurement location, measurement outline, measurement institution and method, etc. |

# Green Building Certification Criteria

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| evaluation section | A Additional items |
| evaluation category | |
| Evaluation standard | A-5 Rate of securing sunlight within household |

■ Evaluation criteria

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|---|---|
| evaluation purpose | Sunshine is one of the rights (environmental rights) stipulated in the Constitution that human beings can receive the direct rays of the sun and live comfortably without being blocked by the external environment. The purpose of this section is to evaluate the degree of accessibility to direct sunlight in living spaces within households. |
| Assessment Methods | Evaluate the rate (%) of households that receive at least 2 hours of continuous sunlight for 6 hours between 09:00 and 15:00 on the winter solstice of the total number of households in the building (complex) subject to examination |
| points | 4 points |
| Calculation standard | • Rating = (weight by grade) × (point distribution)<br><br>※ Sunlight security rate within household (V) = X ÷ Y × 100<br>X: At least 2 hours of continuous sunlight between 09:00 and 15:00 on the winter solstice<br>number of generations<br>Y: total number of households |

| division | Sunlight security rate within household | weight |
|---|---|---|
| 1st grade | V≥80% | 1.0 |
| 2nd grade | 75% ≤ V < 80% | 0.8 |

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<tr><td></td><td>
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<tr><td>3rd grade</td><td>70% ≤ V < 75%</td><td>0.6</td></tr>
<tr><td>4th grade</td><td>65% ≤ V < 70%</td><td>0.4</td></tr>
<tr><td>5th grade</td><td>60% ≤ V < 65%</td><td>0.2</td></tr>
</table>
</td></tr>
<tr><td colspan="2">■ Evaluation Calculation Basis and Documents to be Submitted</td></tr>
<tr><td>Document of proof</td><td>- Restrictions on the height of buildings to secure sunlight (Article 53 of the Building Act, Article 86 of the Enforcement Decree of the same Act)<br>- Windows for lighting and ventilation (Rules on standards for evacuation and fire protection of buildings)<br>- Architectural Environment Science, Kimundang, 1985<br>* Direct sunlight inflow calculation tool<br>Utilization of solar analysis calculation equipment and program<br>(Ex, 3D Max, Solar View, World Ram solar trajectory, etc.)<br>Reference: When calculating, consider the orientation, shape and layout of the building</td></tr>
<tr><td>Documents to be submitted</td><td>- Direct sunlight inflow calculation and result<br>The number of hours of sunshine within the household should be indicated.<br>(Submission of basic data such as calculation conditions and input data)</td></tr>
</table>