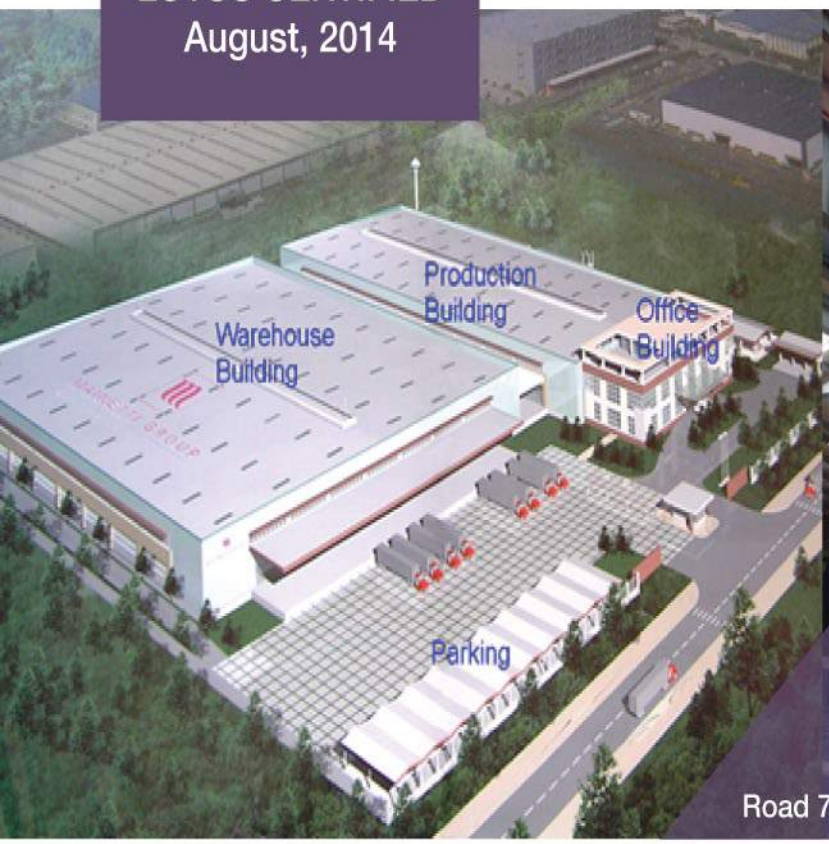
43/100 Points
LOTUS CERTIFIED
August, 2014

LOTUS BIO Pilot – Construction in 2009 - GFA: 18,000 m²



MAINETTI
FACTORY & OFFICE
001-BIO-P

Road 7, Long Thanh Industrial Park, Dong Nai Province, Vietnam

Mainetti Factory & Office is located at Long Thanh Industrial Zone, Long Thanh City, Dong Nai Province, which is 50km away from HCMC. The project was built in 2007 and started the production in 2009. The factory produces plastic hangers with 400 employees operating 6 days a week and 24 hours a day.

Mainetti management board has a very strong focus in sustainability. The group establishes and implements a continuous improvement plan called Plan M which leads and raises the awareness of all staff members through daily activities towards energy saving, environmental protection & sustainable development.

The factory has already applied various solutions towards sustainability. Natural lighting in factory & warehouse is optimized from skylight. T5 bulbs are used to provide ambient light together with process lights for better illumination (LPD surpasses EEBC requirements by 73%). Rainwater is collected for irrigation usage (4 rainwater tanks allow 51% of domestic water reduction for landscaping). Domestic water use is also reduced. In addition to saving electricity and water, Mainetti makes its efforts to help further protect the environment such as using shuttle bus (58% of occupant trips are made by collective transportation) & waste segregation for recycling or reuse.

Though the performance is quite good as compared to LOTUS BIO baselines, Mainetti continues to improve its factory & office operation in order to lower the cost and demonstrate a strong commitment towards a greener environment in Vietnam.

ENERGY	9/33
WATER	4/14
ECOLOGY	1/5
WASTE & POLLUTION	6/7
HEALTH & COMFORT	7/14
ADAPTATION & MITIGATION	7/9
COMMUNITY	1/6
MANAGEMENT	6/12
INNOVATION	2

GREEN FEATURES

14% of Energy use reduction
5% of the building total water consumption from harvested rainwater
67% of the paved and roof areas limit the heat island effect
58% of occupant trips are made by green commuting
Green Management (Plan M) program is implemented

KEY ACTORS

Project Owner: Mainetti Vietnam Co., Ltd.
Consultant: Green Viet Consultancy Co., Ltd.

79/150 points
LOTUS CERTIFIED
September, 2012

LOTUS Non-Residential Pilot – Major Renovation - GFA: 9,800 m²

MOC BAI JSC OFFICE

001-NR-P-MR

Hiep Thanh Trade Zone, Moc Bai District, Tay Ninh Province

Vietnam Moc Bai Joint Stock Company Office is the first project to be evaluated with LOTUS Rating Tool. According to the LOTUS NR Pilot version, the building achieved Certified level with a score of 79 out of 150 points. The project was a major renovation of an existing duty-free center in order to expand working space with extra services and functions for the Vietnam Moc Bai Joint Stock Company.

The 2-storey building provides space for management offices, dorm facilities, a medical center, labs, a kitchen and a canteen on ground floor and a mezzanine. Exterior areas consist of a green area, covered parking lots for cars and motorbikes. Passive design strategies were effectively implemented, providing natural ventilation, natural lighting in occupied area. Wastewater is treated and then reused for landscape irrigation in order to minimize environmental impact. Particularly, used cooking oil from canteen is transformed into biofuel for transportation.

ENERGY	16/34
WATER	8/15
MATERIAL	5/20
ECOLOGY	6/13
WASTE & POLLUTION	11/13
HEALTH & COMFORT	5/20
ADAPTATION & MITIGATION	9/13
COMMUNITY	4/10
MANAGEMENT	8/12
INNOVATION	7

GREEN FEATURES

20% of Energy use reduction
96% of the existing structure has been reused
30% of occupied area is naturally ventilated
61% of building area has access to natural lighting
100% of the waste water is reused
Private cars using biofuel from canteen's used cooking oil

KEY FACTORS

Owner: Vietnam Moc Bai JSC – Taekwang Vina
Architect: Industrial and Civil Designing Consulting JSC (IDCO)
Engineering: Tinh Ky Co. Ltd, EM-Tech Corp
Consultants: GreenConsult-Asia, Indochine Engineering Vietnam

79/150 points
LOTUS CERTIFIED
January, 2013

LOTUS Non-Residential Pilot – New Construction - GFA: 71,691 m²

VIETNAM MOC BAI JSC FACTORY

002-NR-P-NC

Hiep Thanh – Moc Bai Trade Zone, Ben Cau Dist., Tay Ninh Province

After the first LOTUS certified office, Vietnam Moc Bai JSC continued to pursue LOTUS certification for their factory complex. Vietnam Moc Bai JSC Factory became the second LOTUS NR Pilot certified project, achieving Certified level with a score of 79 out of 150 points.

The project includes a set of eight factory buildings and service areas such as electrical rooms, a recycling center, guard houses, water treatment and storage units. These factories share the same water recycling system with the office building.

ENERGY	14/34
WATER	7/15
MATERIAL	5/20
ECOLOGY	5/13
WASTE & POLLUTION	13/13
HEALTH & COMFORT	9/20
ADAPTATION & MITIGATION	10/13
COMMUNITY	4/10
MANAGEMENT	4/12
INNOVATION	8

GREEN FEATURES

18% reduction of energy use
35% of site area vegetated
52% wastewater treated and used for irrigation
100% of construction waste was recycled or reused

KEY FACTORS

Owner: Vietnam Moc Bai JSC – Taekwang Vina
Architect: Industrial and Civil Designing Consulting JSC (IDCO)
Engineering: Tinh Ky Co. Ltd, EM-Tech Corp
Consultant: GreenConsult-Asia, Indochine Engineering Vietnam

111/150 points

LOTUS GOLD
(Provisional)
September, 2012

LOTUS Non-Residential Pilot Version – Major refurbishment - GFA: 7.353 m^2

GREEN ONE UN HOUSE

003-NR-P-MR

304 Kim Ma Street, Ba Dinh Dist., Hanoi

The Green One UN House in Hanoi is the first of 16 pilot projects around the world that gather multiple UN agencies in a single building to encourage collaboration.

The project involved gutting and refurbishing of an existing apartment building besides constructing over an additional area of 2,500m2. A lobby on the ground floor welcomes visitors to a conference center with a 200-person capacity theatre and formal meeting spaces. A cafe space creates a dynamic hub for staff and clients to interact. It also includes a travel agency, a bank, and a learning and research facility.

An extensive stakeholder consultation and a rigorous design review process were performed to ensure that UN staff participate and have a share of ownership over the project.

The design acquired Gold level according to the LOTUS rating system administered by the Vietnam Green Building Council and became a capacity building project for green building design in Vietnam.

Sustainable features of the building include extensive use of green roofs, drought tolerant landscaping, low water use fittings, energy efficient lighting and air conditioning, use of low VOC materials, extensive re-use of recycled materials and photovoltaic panels that supply around 10% of the building total energy demand.

ENERGY	27/34
WATER	6/15
MATERIAL	14/20
ECOLOGY	10/13
WASTE & POLLUTION	10/13
HEALTH & COMFORT	13/20
ADAPTATION & MITIGATION	10/13
COMMUNITY	4/10
MANAGEMENT	12/12
INNOVATION	5

GREEN FEATURES

31% of Energy use reduction
44% reduction of water use through fixtures
94% of Existing structure is reused
35% of total roof area is green roof
58% of landscape area limits heat island effect
Solar panels producing 89,000 kWh/year

KEY ACTORS

Owner: United Nation Development Programs (UNDP)
Architect: GHD
Engineering: ENGCORP, Ecoba
Consultant: GreenConsult-Asia

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 3,805 m²

94/150 points
LOTUS SILVER
December, 2013

POU CHEN KINDERGARTEN

004-NR V1.1-NC

Nguyen Thi Ton street, Hoa An ward, Bien Hoa city, Dong Nai province

Pou Chen's Green World Kindergarten is a project designed and constructed with the philosophy of environmental sustainability, a prototype of the sustainable education space in tropical climate. The kindergarten is home to 500 preschool children of Pou Chen's employees. The 2-storey building is designed as a continuous clover-shaped loop utilizing both an internal courtyard, a green roof and external area to maximize area for playing and outdoor learning. Passive design methods are comprehensively applied in this two-story building including a green roof, louver for shading, natural ventilation and daylighting. Besides, the project has used recycled materials, water recycling, solar water heating and other sustainable solutions.

Through the use of VGBC's Rating Tools (LOTUS), the project identified a specific pathway to ensure that it is developed to the highest specification while retaining the lowest environmental impacts. Under LOTUS Green Building rating scheme of Vietnam Green Building Council, the project is a strong LOTUS Silver with 94 points achieved, among which are 88 credit points in different categories and 6 innovation points for significant enhancement in Energy performance, water use reduction, green roof, construction waste reuse/recycle and use of local material.

ENERGY	28/34
WATER	11/15
MATERIAL	6/20
ECOLOGY	6/13
WASTE & POLLUTION	13/13
HEALTH & COMFORT	9/20
ADAPTATION & MITIGATION	8/13
COMMUNITY	4/10
MANAGEMENT	3/12
INNOVATION	6

GREEN FEATURES

40% of energy use reduction
40% reduction of water use through fixtures
70% of total site area is vegetated.
100% of occupied area have external views
90% of occupied area is naturally ventilated
100% irrigation need covered by recycled water
80% net occupied area is naturally lighted

KEY ACTORS

Owner: Pouchen Co.,Ltd
Architect: Vo Trong Nghia Architects
Consultant: GreenConsult-Asia

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 16,804 m²

87/150 points
LOTUS SILVER
March, 2013

BIG C GREEN SQUARE

005-NR V1.1-NC

National 1K, Dong Hoa Ward, Di An Town, Binh Duong Province

Completed in March 2013, Big C Di An is the 1st Commercial Building to achieve both LOTUS Certification and LEED Certification (US) and is the first Big C commercial center to be certified as a Green Building, illustrating Big C's commitment towards a more sustainable Vietnam.

The building possesses many green features, such as high-performance insulating envelope, reflective roofing, water efficient fixtures, low-VOC materials, permeable hardscape materials, etc. The car parking roof has been covered with 1450 m² of solar panels that produced 231,430 kWh of renewable electricity during the first year of operation. Another notable feature is the ice storage system offering a cost-effective solution for the investor. Particularly, porous concrete was used to reduce storm water runoff and refill the underground water.

Besides energy savings, the building recycles 100% of its waste water, offers a large parking space for bicycles including charging outlets for electric ones, covers and manages public pavement as a green public park benefiting Big C younger customers as well as local kids.

Thanks to all these efforts, Big C became the first building in Vietnam to be awarded with LOTUS Silver Certification in October 2013.

ENERGY	13/34
WATER	9/15
MATERIAL	11/20
ECOLOGY	4/13
WASTE & POLLUTION	12/13
HEALTH & COMFORT	9/20
ADAPTATION & MITIGATION	7/13
COMMUNITY	6/10
MANAGEMENT	8/12
INNOVATION	8

GREEN FEATURES

23% of Energy use reduction
51% of Water use reduction
1450 m² of photovoltaic panels (5% of total energy use)
35% of site perviousness (porous concrete parking)
100% wastewater collected and recycled
Green Transportation Plan implemented
Public Park and Children playground for local people

KEY ACTORS

Owner: Viet Nhat Real Estate JSC – Big C
Architect: HighEnd Architecture
Engineering: Cebi Vietnam, Artelia, Phu Hung Gia, Schneider Vietnam
Consultant: Green Consult-Asia, Indochine Engineering

83/150 points
LOTUS SILVER
April, 2015

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 10,882 m²

BIG C VIET TRI

007-NR V1.1-NC

Nguyen Tat Thanh Street, Viet Tri City, Phu Tho Province

In May 2015, the 24th Big C Supercenter was inaugurated. It is another Big C project that successfully achieved Silver certification following LOTUS Rating Tool for Non-Residential buildings.

Similar to its precedents, the building was designed with numerous green features. Some of them were highly insulated envelope, double-glazed windows, energy-efficient lightings, smart building management system. The commitment to construct more environmentally friendly by having 91% of non-structural wall made up of non-baked materials is also another unquestionable effort.

In this project, once again, Big C design-construction team thrived as a pioneer in greening direction. In addition to exceptional accomplishment in total energy use reduction, water use reduction and local-material contribution, it was awarded innovative points for pursuing long-term benefits. One of them was the air-conditioning system with ice-storage technology for lowering the building's dependence on the town's electrical grid. The other was an on-site wastewater treatment plant, which remarkably reduced the total building's sewer discharge by 74%. Effluent also covered 100% water used for the site's irrigation.

As a result, up to 2015, Big C has shared the biggest portion in green building market in Vietnam.

ENERGY	10/34
WATER	11/15
MATERIAL	10/20
ECOLOGY	2/13
WASTE & POLLUTION	13/13
HEALTH & COMFORT	11/20
ADAPTATION & MITIGATION	10/13
COMMUNITY	4/10
MANAGEMENT	7/12
INNOVATION	5

GREEN FEATURES

21% of Energy use reduction
51% of Water use reduction
34% of materials used have a recycled content
54% of the paved and roof areas limit the heat island effect

KEY ACTORS

Owner: Viet Nhat Real Estate JSC – Big C
Architect: HighEnd Architecture
Engineering: Cebi Vietnam Co. Ltd.
Consultant: Green Viet Consultancy Co., LTD

84/150 points
LOTUS SILVER
December, 2014

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 19,228 m²

BIG C NINH BINH

008-NR V1.1-NC

Tran Nhan Tong St., Ninh Phuc Commune, Ninh Binh City, Ninh Binh Province

Big C Ninh Binh is another committed project that was assessed based on LOTUS Rating Tool for Non-Residential buildings Version 1.1. It was a milestone for the whole province since Big C came as the first hypermarket with modern merchandising retail services.

Following Big C Di An, the building achieved Silver certification by featuring various smart design and green technologies. Construction waste and dedicated sorting & recycling area for operational waste were taken care of comprehensively. Utilization of XPS insulation and double-glazed low-E windows created an envelope with exceptional overall thermal transfer value (OTTV).

Continuing successful application in previous Big C Supercenters, this one was also equipped with air-conditioning system with integrated ice-storage technology, on-site water treatment station, green transportation plan and so on. These helped the building to achieve 6 out of the maximum 8 innovation points from LOTUS.

Until December 2014, there had been 3 Big C projects that were fully certified by LOTUS and some others were under assessment process.

ENERGY	10/34
WATER	9/15
MATERIAL	11/20
ECOLOGY	1/13
WASTE & POLLUTION	13/13
HEALTH & COMFORT	13/20
ADAPTATION & MITIGATION	8/13
COMMUNITY	4/10
MANAGEMENT	9/12
INNOVATION	6

GREEN FEATURES

20% of energy use reduction
51% of water use reduction
55% of materials used have a recycled content
54% of the paved and roof areas limit the heat island effect
OTTV surpasses EEBC's requirement by 82%

KEY ACTORS

Owner: Viet Nhat Real Estate JSC – Big C
Architect: HighEnd Architecture
Engineering: Apave Asia-Pacifique, Cebi Vietnam Co. Ltd.
Consultant: Green Viet Consultancy Co., LTD

87/150 points
LOTUS SILVER
January, 2016

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 26,316 m²

BIG C HA LONG

009-NR V1.1-NC

Column 5, Hong Hai ward, Ha Long City, Quang Ninh Province

Big C Ha Long is located right at the center of Ha Long City, Quang Ninh Province. Since its completion, this two-hectare project has provided a hypermarket, as well as diverse commercial stores. This is the 4th Big C commercial center assessed based on the LOTUS Rating Tool for Non-Residential buildings.

Learning from previous successes, the construction employed a multitude of solutions to ensure high performance, including a well-insulated envelope with a 100mm-thick rock wool layer, a reflective roof membrane and a double-glazed window system with low emissivity glass. Significantly, Big C Ha Long was similarly equipped with an ice storage air-conditioning system that reduces peak load on the main electricity grid, thus gives investors more long-term returns. Besides passive design solutions, various active strategies were used such as installing energy efficient T5 & LED light bulbs, an air-conditioning system integrated with heat recovery function for water heating.

Not only good practices from Big C Di An were carried over to Big C Ha Long, but also mistakes and setbacks were avoided and overcame. For instance, this building had better space layout and light shelves to enhance natural lighting for office spaces. The project is definitely further displays the giant retailer chain's commitment on the sustainable development of Vietnam.

ENERGY	14/34
WATER	10/15
MATERIAL	11/20
ECOLOGY	3/13
WASTE & POLLUTION	10/13
HEALTH & COMFORT	12/20
ADAPTATION & MITIGATION	8/13
COMMUNITY	4/10
MANAGEMENT	8/12
INNOVATION	7

GREEN FEATURES

26% of energy use reduced
50% of water use reduced
57% of materials used have a recycled content
56% of the paved and roof areas limit the heat island effect
Heat Recovery System implemented
Indoor Air Quality Management Plan during construction

KEY ACTORS

Owner: Viet Nhat Real Estate JSC – Big C
Architect: HighEnd Architecture
Engineering: SEAS, Phu Hung Gia
Consultant: Green Viet Consultancy Co., LTD

84/150 points
LOTUS SILVER
(Provisional)
December, 2015

LOTUS Non-Residential Version 1.1 – New Construction - GFA: 30,384 m²

BIG C NHA TRANG

010-NR V1.1-NC

19/5 Street, Vinh Diem Trung Urban Area,
Vinh Hiep Commune, Nha Trang city, Khanh Hoa Province

Big C Nha Trang finished the provisional assessment stage and achieved its target, provisional certification in December 2015. The design-construction team applied a well mix of passive and active strategies to ensure a high performance throughout the whole building.

This Supercenter is the most recent Big C project and obviously inherited all the successful practices from earlier constructions. For instance, the external walls featured 100mm rock wool insulation and double-glazed windows. Energy-efficient lighting and modern irrigation system were also installed. A heat recovery system and a CO2 monitoring connected to the building management system were implemented.

Moreover, the team also took air quality management plan into consideration. Big C Nha Trang was undoubtedly another exemplar of the constructions as well as business investment from the international giant retailer.

ENERGY	7/34
WATER	10/15
MATERIAL	11/20
ECOLOGY	3/13
WASTE & POLLUTION	13/13
HEALTH & COMFORT	10/20
ADAPTATION & MITIGATION	9/13
COMMUNITY	5/10
MANAGEMENT	9/12
INNOVATION	7

GREEN FEATURES

25.3% of energy use reduction
55% of water use reduction
69% of total materials are local materials
61% of the paved and roof areas limit the heat island effect
Heat Recovery System installed
Comprehensive Transportation planned
Air Quality Management Solution planned

KEY ACTORS

Owner: Viet Nhat Real Estate JSC – Big C
Architect: HighEnd Architecture
Engineering: SEAS, Phu Hung Gia
Consultant: Green Viet Consultancy Co., LTD

87/110 points
LOTUS PLATINUM
(Provisional)
May, 2016

LOTUS Non-Residential Version 2.0 – New Construction - GFA: 14,641 m²

DBW LIMITED FACTORY LONG AN

011-NR V2.0-NC

Lot P1A, Street 7, Long Hau Industrial Zone, Long An Province

Registered in 2014, Deutsche Bekleidungswerke Limited Factory is a garment factory in Long An province south of Ho Chi Minh City. It is still under construction, aiming to track Platinum LOTUS certification. In May 2016, it successfully achieved the provisional Platinum certification, which is the first project to gain such high certification level in Vietnam. The strategy for an efficient envelope on this project revolves around above-standard thermal performance of walls, low window-to-wall ratio and efficient glazing on exposed orientations and predominant shading. Energy efficient indoor equipment includes LED lighting systems and HVAC with good COP factor.

Some innovative features are renewable energy share (biofuel and solar energy), recycling of 96% of construction waste and dedicated area for sorting & storing recycles during operation. Besides, the entire occupied area is supplied with fresh air. Another interesting credit for the project is the "urban farm" plan in which 10% of the total planted area will be used for vegetables supplying to the cafeteria.

ENERGY	25/34
WATER	11/15
MATERIAL	5/20
ECOLOGY	8/13
WASTE & POLLUTION	7/13
HEALTH & COMFORT	7/20
ADAPTATION & MITIGATION	10/13
COMMUNITY	3/10
MANAGEMENT	8/12
INNOVATION	3

GREEN FEATURES

44.1% of energy use reduction
100% of construction waste is recycled
100% net occupied area is supplied with fresh air
“Urban farm”
PV panels & biofuel application

KEY ACTORS

Owner: Deutsche Bekleidungswerke
Architect: Artelia
Engineering: VIET ENGINEERING VALUE CONSTRUCTION CONSULTANTS JSC
Consultant: Green Consult-Asia

LOTUS Non-Residential Version 2.0 – New Construction - GFA: 10,472 m²

73/110 points
LOTUS GOLD
(Provisional)
July, 2016

VIETNAM SECURITIES DEPOSITORY

013-NR V2.0-NC

112 Hoang Quoc Viet Street, Bac Tu Liem District, Hanoi

Up to July 2016, Vietnam Securities Depository is the first government-funded project to be assessed under LOTUS Non-Residential Version 2.0 and received a provisional LOTUS Gold certification. Its design stood out greatly with a score of 73 out of 110 points.

The design team highly promotes passive strategies, typically the utilization of vertical & horizontal shading and double-glazed windows. Active technique including energy-efficient HVAC system, elevator technology and LED lights will be implemented throughout the building.

Other notable feature is the commitment of building all non-structural wall from concrete blocks, low VOC ceiling and wall materials, and an on-site wastewater treatment system. What's more, the vegetation surface and PV panels on the rooftop, as well as pervious paving are also designed to significantly reduce heat island effect. Last but not least, energy simulation was constantly verified to get the best combination of energy saving and comfort, which will ensure 100% direct line of sight through the façade's glazing.

TRUNG TÂM LƯU KÝ CHỨNG KHOÁN VIỆT NAM
VIETNAM SECURITIES DEPOSITORY

ENERGY	27/34
WATER	7/15
MATERIAL	4/20
ECOLOGY	4/13
WASTE & POLLUTION	3/13
HEALTH & COMFORT	9/20
ADAPTATION & MITIGATION	6/13
COMMUNITY	6/10
MANAGEMENT	3/12
INNOVATION	4

GREEN FEATURES

39.3% of energy use reduction
42.8% of water use reduction
54% of LDP reduction compared to VBEEC requirement
100% non-structural wall built from non-baked materials
Green roof and green space design
Material Manufacturer QMS/EMS "Environmentally Preferred" certifications

KEY ACTORS

Owner: Ministry of Finance
Architect: TT-As Architecture and Construction JSC
Engineering: Tan Thanh An Co., Ltd
Consultant: Vilandco JSC