1. INNOVATIVE / PERFORMANCE ENHANCEMENT TECHNOLOGIES APPROVED FOR PREVIOUS NB PROJECTS

(*NB May 23*)

Publication date: May 2023

Introduction

(1) These slides contain innovative / performance enhancement technologies that have been approved in previous BEAM Plus NB (New Buildings) projects.

(2) The approval years are given in brackets / at left lower corner.

(3) Users are reminded that technologies approved as IA points for a past project do not necessarily mean that they would attain the same IA scores for other projects. Project assessment will take into account individual circumstances.

Introduction (cont'd)

Definitions of IA1 and IA2 under NB v1.2

- **Innovative Techniques (IA1)** – Advance practices and new techniques not yet been widely adopted in Hong Kong or even elsewhere with environmental benefit.
- **Performance Enhancements (IA2)** - Strategies and techniques perform sig. better than BEAM requirements.

Introduction (cont'd)

"IA" definition under NB V2.0

Present evidence of the application of new practices, technologies and/ or techniques that are

(1) not described in this manual;

(2) not market mainstream implementation; or

(3) multiple aspect achievement

There is only IA1 in NB v2.0. No IA2 is present.

LIST OF PAST CASES

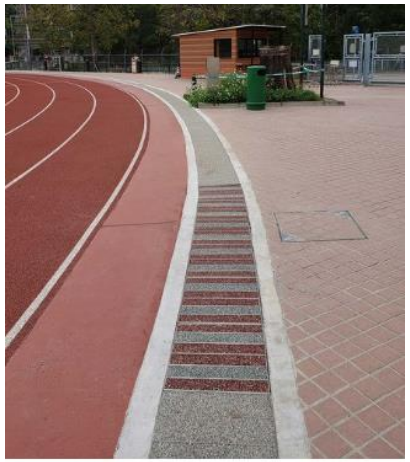
IA1- Innovative Techniques

Porous Drain Cover (PDC)

PDC System is a patented product invented by a Registered Landscape Architect that provides FULL coverage on the drainage channel surface, allowing the surface area to become usable space.

With amazing permeability PDC can screen off debris small as sand, greatly reducing rats activities, debris decay, mosquito breeding, and the need for toxic insecticide and pesticide sprays in channels it covered to provide a better living environment to safeguard the public health.

greenplanshk.com



Innovations

IA 1b - Dry River

Sustainable Urban Drainage System (SuDS) "Dry River" - is a water management technique designed to this project to control the surface runoff by temporary storing the surface water. The Applicant has submitted Dry River design concept and layout drawings, case studies of SuDS, and narrative of environmental benefit to demonstrate SuDS - Dry River is able to reduce the load of storm drain system

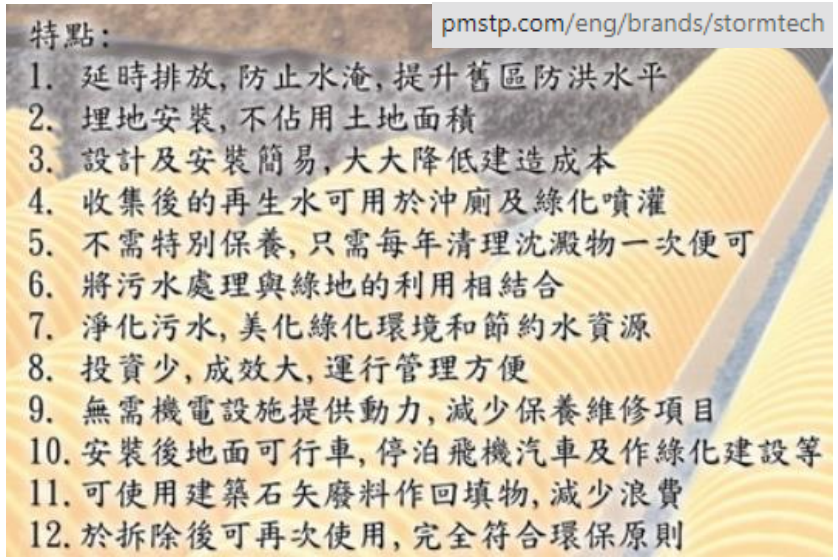
The dry river is a landscaping feature mimicking the shape of a winding stream. The river bed will be lined with natural rocks and stones, rainwater will be channelled into the dry river to assist drainage from the surrounding area during the rainy season. This water will be recycled as irrigation for plants when available.

(Approval Year: PA 2016 / FA 2022)

IA1- Innovative Techniques

Underground Rainwater Detention System (a land-saving solution)

Modular, scalable, does not occupy usable spaces,
no E&M installations, simple installation,
for detention / retention for irrigation or cleansing,
can integrate with soft landscape , withstand car loads
backfill using recycled aggregate; end-of-life re-usable



StormTech
Detention • Retention • Water Quality

v1.2, FA, Nov 21 (Approval year)

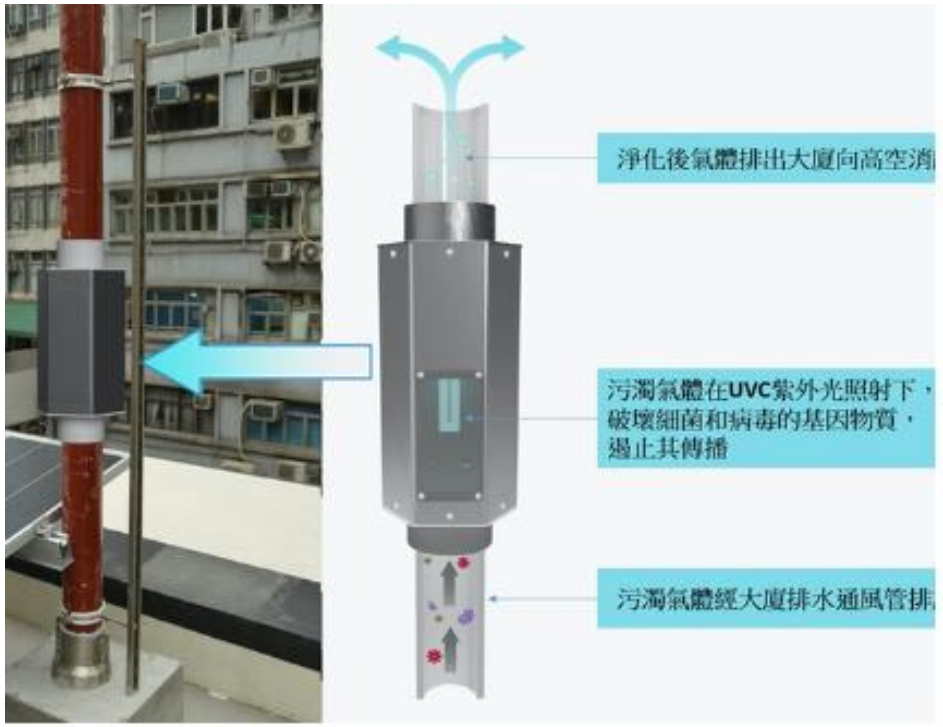
IA1- Innovative Techniques

Top of Soil Stacks – UV Vent Guard to Cope with COVID-19

1. The system effectively irradiating the bacteria and viruses from discharge of polluted air from vent pipe.

2. The system is energy efficient by using low voltage operation. Robust materials and standardized UV-C tubes also increases the durability of the system used on site.

3. The installation can minimize the pathogens exhausted from the vent pipe as to minimize outbreak of the pandemic and other infectious diseases, safeguarding the health and wellbeing of the occupants within the project.



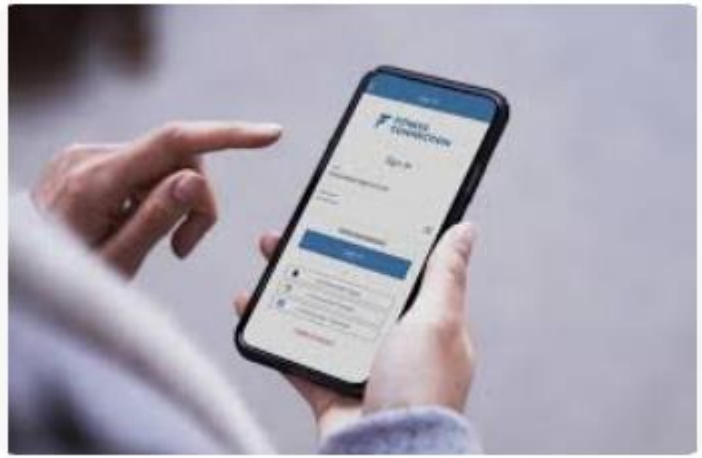
hk01.com/社會新聞/651591/珠海學院成功研發uvc紫外光殺菌裝置-阻新冠病毒經渠管垂直傳播

v2.0, PA, Apr 22 (Approval year)

IA1- Innovative Techniques

Occupant Engagement Platform (Residential)

- Handle new flat take-over
- Payment settlement
- Club house activity engagement
- Notices from property manager



Remark: IDCM 14 is for non-residential buildings
So, residential use is deemed to be new.

Both v1.2 and v2.0, PA, Apr-May 22

IA1- Innovative Techniques

Comprehensive Energy Metering inside Flats

The Applicant submitted a report, specification and brochure of Smart Home System which provide comprehensive energy metering extending to the building residents which exceed the requirement of EU 4. The proposal has the following innovative techniques and environmental benefits:

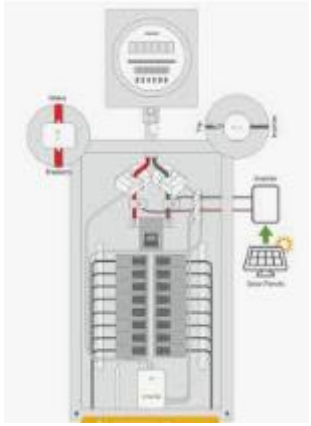
1. Each residential unit will be fitted for energy metering to provide each household with real-time energy data for their consumption information.

2. The building design has been adapted to ensure that the infrastructure can be implemented into the project space to ensure that the system can be executed throughout the project.

3. Increase the awareness of energy consumption for each household for every residential unit.

As the Manual specified the extent of application on EU 4 is for non-residential buildings and common area of residential buildings, the claimed provision is not fully covered by requirement of EU 4.

Single Phase WIFI Smart Metering Monitoring Circuit



v2.0, PA, Apr 22 (Approval year)

IA1- Innovative Techniques

Sustainability Information System (Residential)

1. The Water Consumption Information System displays water consumptions by different serving areas, including residential units, common areas and facilities rooms, which maximizes the utilization of water resources through detailed monitoring and raising user's awareness.

2. The Home Energy Consumption Information System is to display real-time electricity consumption for every residential flat, which maximizes the utilization of electricity. After collecting the data of energy consumption, users can understand their energy use pattern. The system helps to investigate any energy saving measures can be done for the residential users.

3. The Waste Management Information System is an electronic weighing system to determine the frequency for building officers to collect the waste, which enhances the waste management. The system will help occupants to understand their disposal habitat and increase the awareness towards waste reduction and waste separation.

Water Consumption

Home Energy

Waste Management

v2.0, PA, Apr 22 (Approval year)

Innovations

IA 1 Green Lease

The Applicant has submitted a "Green Lease" which will be issued for future tenant fit-out works and form a contractually binding formal agreement between landlord and tenant to adopt design standards and procedures to ensure the building operates to the agreed level demonstrating that:-

- *Environmental objectives is set out between landlord and tenant on how the building fit-out is to be procured, constructed, managed and occupied;*
- *Cost savings in energy and water which can be shared among parties;*
- *Better indoor environment is provided;*
- *Helping tenants design and build sustainable interiors and adopting green building practices ; and*
- *Uptake of BEAM Plus Interior certifications will be aided in the future.*

(Approval Year: PA 2016 / FA 2022)

IA1- Innovative Techniques

Digital Works Supervision System (DWSS)

1. The system can monitor the site condition from time to time. It consists of 5 mandatory modules, including RISC form, site diary / site record book, labour return records, site safety inspection records and cleansing inspection checklist.

2. The DWSS can monitor the site in a real time situation, so as to track and mitigate the impacts as soon as possible. The system can be assessed by different parties, including contractors and project team, so the level of involvement of the construction is increased. The parties may also provide suggestions towards the construction problems. Avoiding errors and hence, the materials, cost and time are well managed and utilized.

3. Through the system, workers can input their inspection forms to the system immediately. Different parties in the project teams can help monitoring the site condition from time-to-time. Moreover, it will be easier to keep the inspection records in order. Hence, the procedure of the works can be done smoothly and systematically.

4. Paper usage for the inspection reports is greatly reduced, so accompanied resources, including electricity and inks for printing reports can be lowered. During disposal of the reports, the solid waste will be reduced.

dwss.com.hk

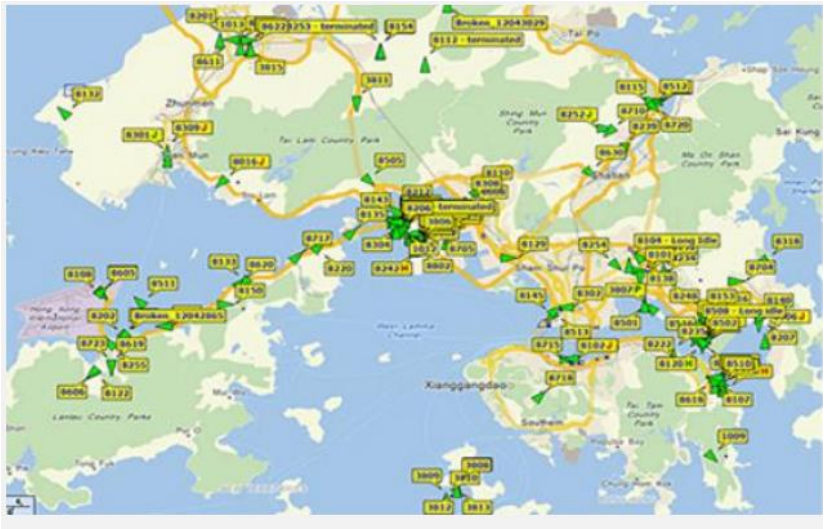
v2.0, PA, Apr 22 (Approval year)

IA1- Innovative Techniques

GPS Concrete Truck Tracking System

Precise location and status of our trucks are sent in real-time to our systems to dynamically calculate and optimize scheduled deliveries, responding to ever changing situations throughout the delivery cycle, from plant to site and beyond. Pre-determined Geofences are created around our customer sites and critical areas to allow our system to respond when a truck has entered or exited an area. With the constant streaming of information, Truck Allocation Optimizer performs calculations every 90s, adjusting algorithms to determine the optimal production line to batch and appropriate truck to deliver the concrete.

The Applicant submitted the narrative and calculation to quantify the claimed environmental benefits to demonstrate the reduction of the idling time for the concrete truck by the system. It benefits the project in reducing emission of pollutants such as carbon monoxide, nitrogen oxides, hydrocarbons and RSP.



concrete.hk/en/csc

v2.0, PA, Jul 22

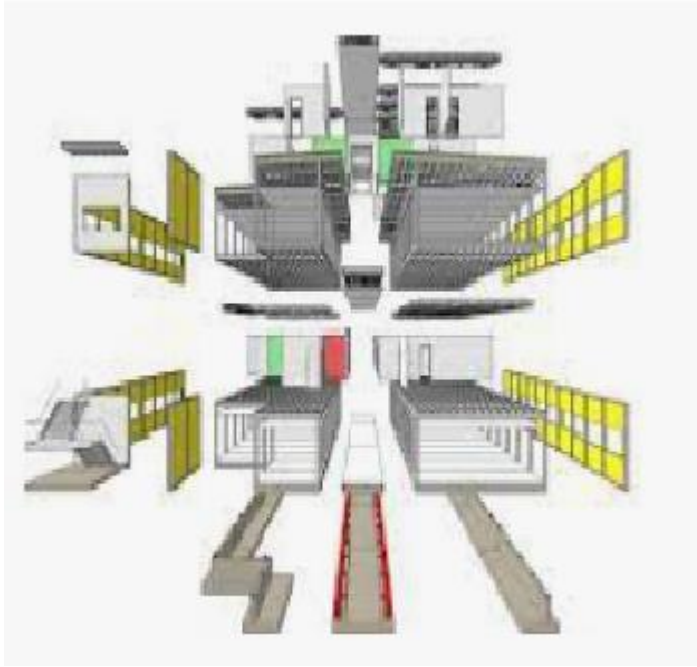
(Approval year)

Remarks about IA1

(1) The assessment body will consider the **kind of technology** and the **extent of application** to judge whether it is an innovation worthy of a bonus (IA1) point. Typically, this would require newer kind of technology and a significant installation rather than a small trial.

(2) As time goes by, some of the above features may be adopted by more and more projects. There is a possibility that the features will **no longer** be counted as innovations due to their prevailing popularity.

IA2 – Performance Enhancement



Design for Manufacture and Assembly

IA 2b - DfMA

The Applicant has submitted the following:
1. DfMA specification;
2. DfMA drawings & design;
3. Area calculation and estimated quantity for DfMA;
4. Construction sequence for DfMA.
which demonstrate that DfMA approach can reduce construction time and material waste. The components are measured, prefabricated into modular components off-site, which are to be installed in a "plug-in" approach.

(Approval Year: 2022)

IA2 – Performance Enhancement

IA 2b Biodiesel for On-site Plant

The applicant submitted invoices, plant list, photo records, benefits and CO2 reduction calculation due to the adoption of Biodiesel. Biodiesel is a renewable fuel manufactured from cooking oils, animal fats and vegetable oils and is adopted in this development. Compared to petroleum diesel, biodiesel is safer and produce less air pollutants than petroleum-based diesel. About 5 tons of CO2 is reduced due to the use of Biodiesel.

(Approval Year: 2019)

Backup Generators | Data Center

IA2 – Performance Enhancement

IA 2h Green Concrete

The "Carbon Labelling Scheme for Construction Products" certificate, concrete purchase record and screen capture of the Certified Products under CIC Carbon Labelling Scheme were submitted to demonstrate all (100%) of the concrete used in the construction site is certified under the CIC Carbon Labelling Scheme upon its recognition on the low GHG generation from the production of ready-mixed concrete

(Approval Year: 2019)

100% concrete is CIC-carbon-labelled

IA2 – Performance Enhancement

IA 2c - Green Contractor Award

The Applicant submitted an announcement letter showing the project main contractor has been awarded as the winner of the Green Contractor Award 2020 - Gold Award on the overall environmental performance of construction site for the project development.

The application materials with narrative descriptions, on-site photos and videos were also submitted showing (i) the implementation of environmental management system; (ii) mitigation measures of water, air, noise and waste pollutions; (iii) innovativeness and creativity of environmental measures, including IoT smart environmental monitoring system for noise and dust, IoT water quality monitoring and water level alert systems, VR cave and 4D animation environmental trainings for dust-free construction, utilisation of BIM models, utilisation of renewable energy etc.; carried out on-site and (iv) the recognitions and awards achieved for the project development (e.g. CCSA Silver Award and OEMPA Bronze Award from Considerate Contractors Site Award Scheme, Occupational Health Award etc.).

(Approval Year: 2022)

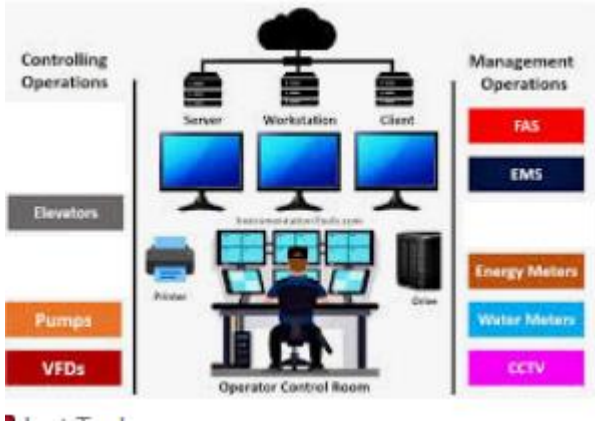
IA2 – Performance Enhancement

IA 2d Energy Smart Monitoring System

The applicant submitted schematic diagram, technical specifications stipulating the Energy Monitoring System to be adopted in the development in order to measure the results of energy efficiency improvements, apply the energy consumption data to better understand and make decisions concerning energy use and energy management practice in housing management of the public rental housing by the applicant. In view of these factors, 1 bonus credit is achieved.

(Approval Year: 2017 PA / 2022 FA)

Public rental estate



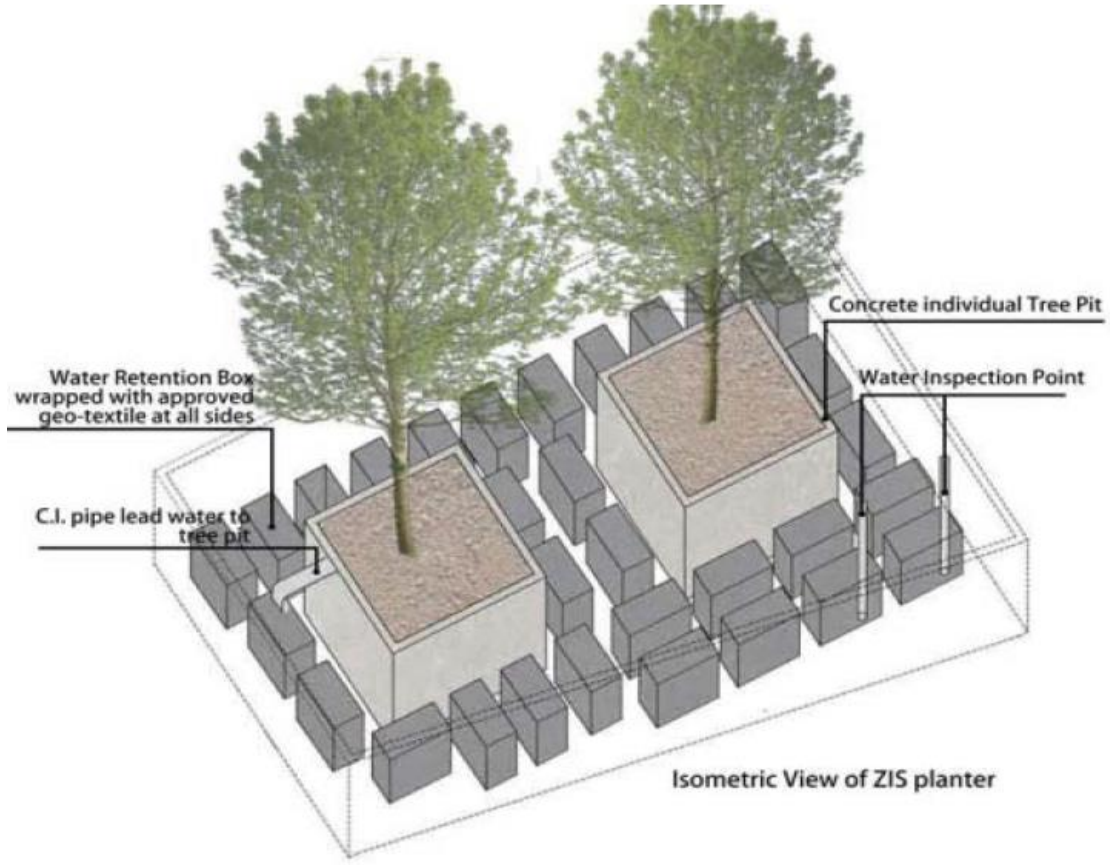
IA2 – Performance Enhancement

IA 2c - Zero Irrigation System

The Applicant submitted zero irrigation system design drawings with water saving calculation, specification, records of water consumption & rainfall, etc. to substantiate the effectiveness of the system. The Applicant claimed that zero irrigation system will be adopted for all soft landscape areas in the development.

In FA, the Applicant is reminded to provide evidence to demonstrate the committed coverage of landscape areas are provided with ZIS.

(Approval Years: 2019 – 2022)



Self-sustained design to the vegetation and to minimize topsoil evaporation

Source: Hong Kong Housing Authority

IA2 – Performance Enhancement

IA 2e - De-odorizing System

The Applicant submitted electrical layout with equipment information, design guideline, and sample catalogue & operation manual of the de-odorizing system to show that a biotech deodorizing system will be provided in refuse collection rooms.

Biotech de-odorization system is adopted in the refuse collection point for this project to eliminate odors from municipal solid waste within the refuse storage area and is beneficial to the health of cleansing workers health. The biotech de-odorization system contains biological agent, which would be converted into ultra-fine and non-wetting mist by a set of automatic sprinkler system. The mist of biological agent would then be applied directly to the refuse storage area to remove hazardous and odorous pollutants in the air.

(Approval Year: 2022)