

MEDIA RELEASE

Winners of this year's BCA Design and Engineering Safety Excellence Awards 2010 unveiled

- Engineers behind projects 313@Somerset, 78 Shenton Way and City Square Residences recognised for overcoming site challenges through creative engineering designs for site and public safety

- Nine other merit winners – involving residential, commercial, institutional and industrial, civil engineering and overseas projects – also announced

Singapore, 6 May 2010 – The Building and Construction Authority has today announced the winners of the Design and Engineering Safety Excellence Awards. The three award winners – 313@Somerset, 78 Shenton Way and City Square Residences – were chosen by a panel of experts from the industry, out of the 20 projects vying for one of the construction industry's top honours this year. Unveiled as merit winners were nine other projects.

2 The BCA Design and Engineering Safety Excellence Award recognises Qualified Persons – who are the engineers for structural works – and the project team members for coming up with excellent design solutions that overcame challenges, while maintaining a high standard of safety in their projects.

3 For the project 313@Somerset, the construction of the new shopping centre involved diverting the 10-metre wide Stamford canal at Somerset and reconstructing the permanent canal to pass through the basement of the building.

4 This is a massive undertaking which required extensive risk assessment and engineering expertise to ensure that the works were carried out safely. Also, the building professionals for this project had to deal with tight space constraints due to the site being situated close to the underground MRT line in the heart of the Orchard.

5 The project at 78 Shenton Way was noted for the unique challenge of having a seven-storey office built above an existing four-storey carpark, which had to be in operation throughout the construction. Additionally, the site is within close proximity of buildings in one of the busiest part of Singapore – the Central

Business District. Careful and meticulous planning was needed by the building professionals for construction work without compromising public safety.

6 Slated to be an environmentally friendly and sustainable condominium private residence, the third award winner is the City Square Residences – which also won the BCA Green Mark Gold award last year for its environmentally friendly features.

7 The project involved the building of a 126-metre wide diaphragm wall which was devised by the engineers to mitigate the risks in constructing three levels of basement car parks under difficult soil conditions. The wall also protects the structural safety of old shophouses in its vicinity.

8 Commenting on this year's award and the winners, the Chairman of the assessment committee and a BCA board member, Mr Pek Lian Guan said, "We are pleased to have unveiled the award winners this year and wish to congratulate the Qualified Persons and other building professionals of each project. In our densely built environment, engineers are constantly challenged to overcome constraints and difficulties with their creative engineering design solutions. I would like to commend these engineers' professionalism and tireless effort in contributing to our safe built environment."

9 Added BCA's Director for Building Engineering, Mr Chew Keat Chuan, "The creative and ingenious ways that the building professionals overcame various challenges for their projects bode well for the future of construction in Singapore. Each of the award and merit winners deserves the accolade and recognition because they have raised the safety standards of building projects in Singapore to a higher level. We hope they will inspire other building professionals in pursuing design and engineering safety excellence for their projects."

10 Besides the three award winners, these projects were given merits for their excellence in design and engineering safety (in no order of merit):

- 71 Robinson Road
- Jurong Point 2/ The Centris
- Changi Terminal 3
- City Square Mall
- Fusionopolis @ One-North
- Marina Barrage
- SengKang N2 C36
- Singapore Flyer
- BIDV HQ (Hanoi)

11 The award and merit winners will be presented during the BCA Awards 2010 at the Shangri-La Hotel on 26 May 2010. The Senior Minister of State for National Development Ms Grace Fu will grace the occasion as the guest-of-honour.

Issued by the Building and Construction Authority on 6 May 2010

About the Building and Construction Authority (BCA)

The Building and Construction Authority (BCA) of Singapore champions the development of an excellent built environment for Singapore.

At BCA, our mission is to shape a safe, high quality, sustainable and friendly built environment, as these are four key elements where BCA has a significant influence. In doing so, we aim to differentiate Singapore's built environment from those of other cities and contribute to a better quality of life for everyone in Singapore. Hence, our vision is to have "the best built environment for Singapore, our distinctive global city".

Together with our education and research hub, the BCA Academy of the Built Environment, BCA works closely with its industry partners to develop skills and expertise that help shape the best built environment for Singapore.

Please visit www.bca.gov.sg for more information.

About the BCA Awards

The BCA Awards is an annual event to honour and pay tribute to displays of excellence in the built environment in the areas of safety, quality, sustainability and user-friendliness.

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Commercial Category – Award Winners**

78 Shenton Way



Qualified Person	Er Liew Keng How, Kenneth
C&S Consultant	T.Y.LIN International Pte Ltd
Builder	Shimizu Corporation
Developer	Singapore Shenton Holdings Pte Ltd
Architectural Consultant	Forum Architects
Construction Cost	S\$65 million

Introduction

78 Shenton Way is located in the western part of the Central Business District, bounded by Shenton Way, Anson Road and Keppel Road with the Keppel Road flyover viaduct along the site's boundary. The project involved the construction of a new seven-storey office building on top of an existing four-storey carpark, which must remain operational throughout the construction.

Challenges

- Constructing the new office building over the existing carpark with minimal disruption to its operations
- Allowing for a column-free office space (22m span)
- Dealing with difficult site constraints – close proximity to other buildings and major roads, restricted access to construction site, and limited headroom and workspace in the basement

Solutions

- Designing the new building to “straddle” over the existing carpark using a steel post-tensioned transfer trusses to support the weight of the additional seven storeys above it. The steel transfer trusses were erected in four segments of 65 ton each. A careful study was carried out of the mobile crane's swinging radius in relation to site constraints, the design of a temporary erection tower, and close liaison with the Authority for road closure to ensure the safety during the erection
- Using composite steel construction for columns located along the perimeter of the existing carpark and floor beams spanning 22m. The use of composite steel increases the material strength, reduces weight of the structure and helps to simplify the construction on site
- Using off-site fabrication for structural elements minimised traffic congestion at site (which is within the busy Central Business District)
- Using micro-piling system to address the height and space constraints within the existing basement, with the weight of the structure reduced

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Commercial Category – Award Winners**

313@Somerset



Qualified Person	Er Wong Pui Fun, Joanne
C&S Consultant	Meinhardt Infrastructure Pte Ltd
Builder	Bovis Lend Lease Pte Ltd
Developer	Lend Lease Retail Investments 1 Pte Ltd
Architectural Consultant	Aedas Pte Ltd
Construction Cost	\$220 million

Introduction

313@Somerset is a shopping centre located at Orchard Road. The project involved the construction of a seven-storey retail building, including two levels of carpark and three basement levels.

Located close to the project are the Somerset MRT station and train tunnels. Within the site itself are the entrance to the Somerset MRT station and the 10m-wide Stamford canal, of which both have to be fully operational throughout the construction.

Challenges

- Integrating and diverting the 10m-wide Stamford Canal within the development while ensuring canal remains fully functional during the temporary diversion,
- Minimising ground movement throughout the construction due to the site's close proximity to the MRT station and tunnel.
- Demolishing and re-constructing the MRT station entrance, while ensuring the safety of the MRT commuters (50,000 commuters daily) and pedestrians.
- Overcoming difficult ground conditions as the site is sitting on a thick layer of soft soil.

Solutions

- Integrating the Stamford canal into the basement of the building. The canal was diverted from its course into the building via the construction of a sheet-pile wall. It is then "encased" in a new canal box section, which sits on the building's basement slab / beam
- Minimising ground movement using diaphragm wall (continuous reinforced concrete wall), T-panels and cross diaphragms
- Constructing temporary sheltered walkways for commuters and pedestrians, which required numerous diversions due to the heavy human traffic and site constraints
- Using the Building Information Modelling(BIM) – an IT software that allows the project team to visualise building drawings and plans in 3D and perform various functions (for example, engineering analysis) – for the safe demolition of the existing MRT entrance
- Performing a finite element analysis to gauge probable tunnel movement, and adjacent building settlement for the design of the building's diaphragm wall, due to the difficult soil conditions on site

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Residential Category – Award Winners**

City Square Residences



Qualified Person	Er Yeo Choon Chong
C&S Consultant	Meinhardt (Singapore) Pte Ltd
Builder	Woh Hup Pte Ltd
Developer	City Developments Ltd
Architectural Consultant	Ong & Ong Architects Pte Ltd
Construction Cost	\$188.7 million

Introduction

City Square Residences is located along Kitchener Road, near the Farrer MRT station.

The 910-unit project involved the development of six towers of private residential apartments, with their heights ranging from 28 to 30 storeys. For the residents, the developer, City Developments Limited, incorporated many eco-friendly features into their homes. These include green roofing, low-emissivity glazing for windows, a twin-chute pneumatic waste system and a system that collects rainwater to water the landscape.

Challenges

- Managing excavation works for safety due to the site's difficult sub-soil conditions (the site sits on a 20 m thick layer of soft marine clay), 3 levels of basement, the presence of an operating water main along the sides of the site and old shop houses in its vicinity
- Building condominium apartments with eco-friendly features
- Using pre-finished / fitted prefabricated bathroom units to fulfill the construction-friendly requirement of the project

Solutions

- Building a strut-free 126m diameter Circular Diaphragm Wall Retention System with capping beams, which facilitated easy, safe and fast excavation and construction of the basement structure
- The adoption of high level of Pre-cast Elements that reduces wastage of material and manpower at site, increases productivity, promotes cleaner and safer working environment for the workers. 77% of total bathrooms are pre-fabricated bathroom units using reinforced concrete design support system

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Commercial Category – Merit Award**

71 ROBINSON ROAD

	Qualified Person	Er Lai Huen Poh
	C&S Consultant	RSP Architects Planners & Engineers (Pte) Ltd
	Builder	Kajima Overseas Asia (Pte) Ltd
	Developer	Kajima-Lehman (Robinson) Development (Pte) Ltd
	Architectural Consultant	Architects 61 (Pte) Ltd
	Construction Cost	S\$95 Million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Commercial Category – Merit Award**

Jurong Point 2 / The Centris

	Qualified Person	Er Yeo Choon Chong
	C&S Consultants	Meinhardt Infrastructure Pte Ltd
	Builder	Woh Hup (Pte) Ltd
	Developer	Prime Point Realty Development Pte Ltd
	Architectural Consultant	cgnArchitects Pte Ltd
	Construction Cost	\$250 million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Commercial Category – Merit Award**

The City Square Mall

	Qualified Person	Er Yeo Choon Chong
	C&S Consultant	Meinhardt (Singapore) Pte Ltd
	Builder	Kajima Overseas Asia Pte Ltd
	Developer	City Developments Ltd
	Architectural Consultant	Ong & Ong Architects Pte Ltd
	Construction Cost	\$188.5 million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Institutional & Industrial Category – Merit Award**

Changi Terminal 3

	Qualified Person	Er Kueh Lip Kuang
	C&S Consultant	CPG Consultants Pte Ltd
	Builder	Shimizu Corporation
	Developer	Changi Airport Group (Singapore) Pte Ltd
	Architectural Consultant	CPG Consultants Pte Ltd
	Construction Cost	S\$1,200 million


**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Institutional & Industrial Category – Merit Award**

FUSIONOPOLIS @ one-north

	Qualified Person	QP (Design) : Er Chan Yek Seng QP (Supervision): Er Pueh Jye Huey
	C&S Consultant	JURONG Consultants Pte Ltd
	Builder	Shimizu Corporation
	Developer	JTC Corporation
	Architectural Consultant	JURONG Consultants Pte Ltd
	Construction Cost	S\$300 million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Civil Engineering Category – Merit Award**

Singapore Flyer

	Qualified Person	Er Ho Chong Leong
	C&S Consultant	Arup Singapore Pte Ltd
	Builder	Takenaka Corporation (Building Works) Mitsubishi Heavy Industries Ltd (Giant Observation Wheel)
	Developer	Singapore Flyer Pte Ltd + Melchers Project Management Pte Ltd
	Architectural Consultant	Kisho Kurokawa Architect & Associates, in association with DP Architects
	Construction Cost	S\$200 million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Civil Engineering Category – Merit Award**

Marina Barrage



Qualified Person	Er Ho Siew Koon Camp Dresser & Mckee Intl(S) Pte Ltd
C&S Consultant	SKM Consulting (S) Pte Ltd
Builder	Koh Brothers Construction and Engineering Contractor Pte Ltd
Alternate Design Consultant	Black & Veatch (SEA) Pte Ltd
Temporary Work Designer	AGS Consultants (S) Pte Ltd
Developer	Public Utilities Board
Architectural Consultant	Architects Team 3
Construction Cost	S\$250 Millions

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Residential Category – Merit Award**

SENGKANG N2C36

	Qualified Person	Er Ng Peng Yuen, John
	C&S Consultant	Surbana International Consultants Pte Ltd
	Builder	Kay Lim Construction and Trading Pte Ltd
	Developer	Housing and Development Board
	Architectural Consultant	Surbana International Consultants Pte Ltd
	Construction Cost	\$56.8 million

**DESIGN AND ENGINEERING
SAFETY EXCELLENCE AWARDS 2010
Overseas Category – Merit Award**

BIDV TOWER, HANOI, VIETNAM

	Qualified Person	Er Leung Wai Man
	C&S Consultant	P&T Consultants Pte Ltd
	Builder	Hanshin Engineering & Construction Co., Ltd
	Developer	BIDV Joint Venture Company
	Architectural Consultant	P&T Consultants Pte Ltd
	Construction Cost	US\$ 38 Million

**BCA Design and Engineering Safety Excellence Awards
Assessment Committee**

Chairman	Mr Pek Lian Guan	BCA Board Member Deputy Managing Director Tiong Seng Contractors Pte Ltd
Deputy Chairman	Mr Frederic Perez	BCA Board Member Project Director Dragages Singapore Pte Ltd
Members	Er Dr Tan Teng Hooi	T Y Lin International (SEA) Pte Ltd
	Er A/Prof Wong Kai Sin	Nanyang Technological University
	Ms Rita Soh	Singapore Institute of Architects
	Er Yap Tiem Yew	Housing Development Board
	Er Koh Boon Liang	Association of Consulting Engineers
	Er Chan Ewe Jin	Institution of Engineers Singapore
	Er Dr Nasim Shahzad	Meinhardt Singapore Pte Ltd
	Er Lai Huen Poh	RSP Architects Planners & Engineers Pte Ltd
	Er Lim Peng Hong	PH Specialist
	Er Brendon McNiven	Arup Singapore Pte Ltd
Er Chew Keat Chuan	Building and Construction Authority	

Terms in Chinese

Design and Engineering Safety Excellence Award
优秀设计和工程安全奖

Chairman Assessment Committee
BCA Board Member
Mr Pek Lian Guan

评审委员会主席
建设局董事会成员
白连源

BCA
Director of Building Engineering
Mr Chew Keat Chuan

建设局
结构工程署署长
周吉泉

313@Somerset

Developer	: Lend Lease	联盛
D&B Contractor	: Bovis Lend Lease	宝维士联盛
C&S Consultants	: Meinhardt Infrastructure Pte Ltd	迈进基础设施工程顾问
QP Name	: Ms Wong Pui Fun, Joanne	黄佩芬

78 Shenton Way

QP Name	: Liew Keng How	刘耿孝
C&S Consultants:	T.Y.Lin International Pte. Ltd.	林同棧工程顾问股份有限公司

City Square Residences

QP Name	: Yeo Choon Chong's	杨俊聪
C&S Consultants	: Meinhardt (Singapore) Pte Ltd	迈进(新加坡)私人有限公司
Project name	: City Square Residences	城市雅居

Terms (English)	Terms (Chinese)
basement	地下室
BIM (building information modelling)	建筑信息模型
composite steel construction	钢与混凝土组合结构
diaphragm wall	地下连续墙
earth retaining structures	挡土结构
finite element analysis	有限元分析
foundation	基础
headroom	净空
ingenious structural solution	巧妙的结构解决方案
low shear strength	低剪切强度
low-e glazing	低辐射玻璃
LTA Railway Protection Zone	陆路交通管理局制定的地铁线保护范围
micropiling	微型桩
piling	桩基
precast element	预制构件
prefabricated bath unit	预制浴室单元
prefabrication	预制
rainwater harvesting system	雨水收集系统
reinforced concrete	钢筋混凝土
settlement	沉降
sheet-pile wall	钢板桩维护墙
soft marine clay	软粘土
soft soil	软土
steel post-tensioned transfer truss	后张预应力钢转换桁架
strut free circular diaphragm wall retention system	无支撑圆形地下连续墙维护体系
strut free retention system	无支撑维护体系
superstructure	上层结构
sustainable design	永续设计
top-down construction	由上而下的施工
wet trade / cast in-situ	现场浇筑混凝土