BCA AWARDS 2015
Recognising Excellence in the Built Environment
The Construction Productivity Awards (CPA) recognise outstanding industry firms for going the extra mile to achieve construction productivity improvements and promote higher productivity in the industry.

There are two award categories:
• CPA – Projects
• CPA – Advocates

The CPA - Advocates assesses the specific efforts made by developers, consultants and builders towards designs, construction methods, processes and/or technologies adopted that have significant productivity impact in their projects. Also, their actual productivity performance, both in terms of value-added productivity or physical productivity of their projects will be considered. The CPA - Projects is given to project teams that have demonstrated productivity in their construction development projects from design to construction.
The CPA – Projects is awarded to project teams that have demonstrated productivity in their projects from the design to the end of construction. The award aims to:

• Encourage designers to come up with labour-efficient designs;
• Encourage the adoption of labour-efficient construction methods; and
• Recognise project teams for their excellent project planning and coordination in enhancing productivity.

The award has nine sub-categories:

• Residential Landed Buildings
• Residential Non-landed Buildings (for projects with Gross Floor Area of less than 25,000m²)
• Residential Non-landed Buildings (for projects with Gross Floor Area of more than or equal to 25,000m²)
• Commercial and Office Buildings
• Institutional Buildings
• Industrial Buildings
• Mixed Development Buildings
• Additions & Alterations / Upgrading Buildings
• Civil Engineering Projects
368 Thomson

CONSTRUCTION PRODUCTIVITY AWARD - Projects

KEY FEATURES

- Repetitive unit design enabled the standardisation of precast elements.
- A combination of sheet piling and open cut methods were employed for basement excavation, optimising both cost and time.
- Wide adoption of system formwork for basement construction of pile caps, retaining wall and columns to suit the structure configuration.
- Extensive use of precast beams and precast slabs to reduce workers on site.
- Off-site production of prefabricated bathroom units (PBUs).
- Adoption of buildable trades such as drywall partition, screedless flooring, rebated door with lift-off hinges and prefabricated bathrooms.
- The use of system formwork for the construction of shear walls eliminated the need for plastering works.

Developer: City Developments Limited
Architectural Consultant: DP Architects Pte Ltd
Structural Consultant: Meinhardt (Singapore) Pte Ltd
M&E Consultant: Conteem Engineers Pte Ltd
Design and Build Contractor: Dragages Singapore Pte Ltd
KEY FEATURES

- A hybrid construction method consisting of cast-in-situ vertical columns/walls with horizontal precast elements like planks and beams helped the project to achieve an average of 6-day cycle time.
- Extensive use of precast elements.
- Prefabricated bathroom units (PBU) were installed.
- Extensive use of drywall partition system was adopted.
- Use of external cantilevered façade platforms, stair platforms, working platforms and internal shaft platforms eliminated the need for full height scaffolding while providing the required safety.
- A vertical reinforcement prefabrication yard on site allowed faster speed of construction and helped to reduce rebar wastage since double height reinforcement bars could be prefabricated on site.
**TreeHouse Condominium**

**CONSTRUCTION PRODUCTIVITY AWARD - Projects**

**KEY FEATURES**

- Use of full precast envelope system helped the project to achieve a typical floor cycle of 7 days.
- A flat plate system with precast perimeter beams was adopted.
- Modularised heavy-duty but lightweight aluminium system formwork was adopted.
- Use of drywall partitions for the internal walls.
- Use of a mobile platform and working platform for the construction of the lift core for vertical access in the lift core without any scaffolding.
- Pile raft system was used in construction of the basement.
- For the high-rise vertical green wall, the main steel structure and access for maintenance were produced in a modular system off-site and assembled with bolting system on site.
- The Chestnut Pavilion was constructed using steel structure and full length aluminium infill.

**Developer:** Chestnut Avenue Developments Pte Ltd (City Developments Limited)

**Architectural Consultant:** ADDP Architects LLP

**Structural Consultant:** DE Consultants (S) Pte Ltd

**M&E Consultant:** United Project Consultants Pte Ltd

**Design and Build Contractor:** Tiong Seng Contractors (Pte) Ltd
KEY FEATURES

- Extensive use of precast and prefabricated elements.
- Standardisation of components such as door and window sizes.
- Standardisation of floor height.
- Adoption of “press-fit” method of joining copper piping helped to enhance productivity as it was faster as compared to welding.
- Use of a steel structure roof instead of a reinforced concrete linkway roof, helped improve productivity.
- Pre-assembly of steel roof on site which was hoisted up using a mobile crane.
- The use of a “skin wall” that was precast together with the external side of the beam pocket eliminated the shifting of external climbing platform.
- Use of precast external wall with cast in window.

Developer: Housing & Development Board
Architectural Consultant: ADDP Architects LLP
Structural Consultant: DE Consultants (S) Pte Ltd
M&E Consultant: United Project Consultants Pte Ltd
Builder: China Construction (South Pacific) Development Co Pte Ltd
Sengkang N4C11 (Fernvale Foliage)

KEY FEATURES

- Extensive use of precast structural elements and non-structural elements such as staircases, refuse chutes, facades, parapet walls and air-con ledges.

- Integration of precast beams with precast facades and precast gable-end walls minimised the number of hoists required for the installation of precast components per floor and optimised crane resources.

- A precast skin was introduced to the precast two-tier column to eliminate the need to install formwork on the external face of the gap between the top and bottom segments of the columns.

- Simple design adopted for the roof fascia, with minimal cantilevered and protruding architectural features.

- A specially designed steel rack was mass produced and used for the hoisting of the precast lightweight walls to the uppermost floor under construction, and served as a storage rack for the precast partition walls prior to installation.

Developer: Housing & Development Board
Architectural Consultant: Architects Vista Pte Ltd
Structural Consultant: TH Chuah & Partners LLP
M&E Consultant: Rankine & Hill (S) Pte Ltd
Builder: Straits Construction Singapore Pte Ltd
**Floral Spring (Yishun N4C4)**

**CONSTRUCTION PRODUCTIVITY AWARD - Projects**

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### KEY FEATURES

- **Extensive use of precast components increased productivity.** Use of precast columns and façade walls eliminated the use of external scaffold, external formwork and platform system.

- **Use of household shelter and storey shelter that were volumetric with hollow cores enabled ease of hoisting and installation with tower crane.** Vertical load bearing components such as columns and walls were designed with either spiral connector or splice sleeve for connection detailing, which enabled fast installation.

- **Standardisation of beams and column was adopted for efficient fabrication and construction.**

- **Use of stainless steel press-fit system increases the productivity in installing domestic water pipes and reduced the tendency of possible leaking.**

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**Developer:** Housing & Development Board  
**Architectural Consultant:** Ong&Ong Pte Ltd  
**Structural Consultant:** Meinhardt (Singapore) Pte Ltd  
**M&E Consultant:** Rankine & Hill (S) Pte Ltd  
**Builder:** Ho Lee Construction Pte Ltd
Edward Boustead Centre

CONSTRUCTION PRODUCTIVITY AWARD - Projects

KEY FEATURES

- Design of uniform gridline of approximately 8m per grid allowed the system formwork and façade materials to be repeated throughout all the floors and elevations.
- Use of lightweight wall panels in regular and modular-dimensions.
- Standardisation of warehouse column dimension and floor height allowed full reuse of formwork.
- Design of external driveway as a non-suspended slab using steel fibre reduced time and improved productivity.
- Self-compacting concrete was used to reduce time and manpower.
- Use of prefabricated ducting eased the installation on site and reduced the amount of loose materials.
- Use of cast-in ceiling inserts for the air-conditioning ducting and the main sprinkler pipe for the uppermost floor of the project ensured minimal work during installation.

Developer : BP-Ubi Industrial P/L
Architectural Consultant : HA Architects P/L
Structural Consultant : BC Koh & Partners LLP
Design and Build Contractor : Boustead Projects P/L
The Metropolis

KEY FEATURES

- Extensive use of precast and prefabricated components.
- Large extent of repetition of floor heights and structural floor layouts increased efficiency of downstream structural works.
- Dry walls and lightweight concrete panels were adopted with no usage of brick walls.
- Use of off-site fabricated unitised glazing panels with shading fins integrated into the panel design.
- Use of pre-insulated chilled water pipes and mechanical joints (instead of welding) for fire protection piping.
- Strut-free excavation method whereby the permanent slab was cast to act as struts. Basement excavation was easier and faster without obstruction of the steel struts.
- Use of remote controlled hydraulic system for lifting up the core wall formwork.
- Use of table lift to transfer modules of the table formwork from cast floor to new floor.

Developer: Ho Bee Land Limited
Architectural Consultant: DCA Architects Pte Ltd
Structural Consultant: KTP Consultants Pte Ltd
M&E Consultant: KTP International Pte Ltd
Design and Build Contractor: Lum Chang Building Contractors Pte Ltd
Asia Square Tower 2

CONSTRUCTION PRODUCTIVITY AWARD - Projects

KEY FEATURES

- The original conventional two-way beam system was modified to a one-way beam system for the typical office floors. This helped to save manpower.

- Extensive use of drywall and the location and sizes of curtain wall were coordinated with the drywall design, increasing efficiency.

- Use of system formwork and concrete placing booms improved the productivity and shortened the overall construction period.

- Extensive triple low-emissivity coating double glazed curtain wall was adopted and the use of self-climbing system formwork removed the need for scaffolding to the external facade.

- Use of scissor lifts eliminated the need for scaffolding for mechanical and electrical works.

Developer: Asia Square Tower 2 Pte Ltd
Architectural Consultant: Architects 61 Pte Ltd
Structural and M&E Consultant: Meinhardt (Singapore) Pte Ltd
Design and Build Contractor: Hyundai Engineering & Construction Co. Ltd
Redevelopment of Specialists’ Centre and Hotel Phoenix

CONSTRUCTION PRODUCTIVITY AWARD - Projects

Developer: Orchardgateway Private Limited
Architectural Consultant: AWP Pte Ltd
Structural Consultant: Meinhardt (Singapore) Pte Ltd
M&E Consultant: Alpha Consulting Engineers Pte Ltd
Builder: Hyundai Engineering & Construction Co. Ltd

KEY FEATURES

- Use of fire-rated autoclaved aerated concrete (AAC) panels helped to reduce labour, increase speed of installation and eliminated the need for external scaffolding.
- Extensive use of one-way beam system to typical office floors was adopted for ease of construction.
- For the construction of the underpass underneath the Stamford Canal linking the Specialist Shopping Centre basement 2 and the Phoenix hotel basement, a top down method with the use of precast beams and slab together with the support of circular hollow section micro piles was carried out to overcome limited construction space.
- The use of the system formwork and concrete placing booms enhanced productivity and reduced the overall construction period.
- Use of scissor lifts and boom lifts eliminated the requirement for scaffolding for the architectural and mechanical and electrical works.
Improvement to Geylang River from Dunman Road to Guillemard Road Project

CONSTRUCTION PRODUCTIVITY AWARD - Projects

KEY FEATURES

- Construction using Jet Grout Piles (JGP) forming into an inverted arch across the entire section of the U-drain.
- A water control gate was used at the downstream of the project to control the water level and to enable construction in a dry environment.
- A girder system for jet grouting in the river bed enabled work within tight areas to be carried out, improving productivity.
- Less machinery were deployed in the river bed as the JGP machines were able to move along on the girder straddling the width of the river so that the flow of the water from upstream was not affected.
- Use of prefabricated mesh and cut/bend reinforcement bar increased productivity and speed in forming the concrete canal base and wall.
- Change of the reinforcement of the permanent drain to prefabricated mesh which was repetitive and could be easily installed.

Developer: Public Utilities Board
Architectural, Structural and M&E Consultant: Surbana International Consultant Pte Ltd
Alternative Design Contractor: Koh Brothers Building & Civil Engineering Contractor (Pte.) Ltd
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## Construction Productivity Awards - Projects

### Gold

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