Formwork Scaffolding Engineering
Issue 1 | 2010 SG MY

PERI®

scope

Successful construction with PERI

Dear customers,

We are very pleased to present PERI Asia's first edition of the PERI Scope covering interesting construction sites in Singapore and Malaysia.

Over the years, we have achieved and sustained our position as market leader in the local formwork market. As a partner of the construction industry, we are committed in helping our customers to achieve a successful project outcome through cost effective engineering solutions with better safety and higher productivity.

Falling from height is the number one accident on construction sites. PERI has successfully introduced innovative products such as the RCS P (Rail Climbing System – Protection) to allow for safe working from height, resulting in increased productivity and reduced construction costs.

GRIDFLEX, the new aluminium grid slab formwork system has been developed for flexible, fast and safe residential construction and is currently being introduced into the Singapore market.

The high durability and reusability of PERI formwork systems has also helped our customers to reduce wastage of resources and play an active part in sustaining our environment.

PERI is continuously striving to deliver the best quality products and services to our customers. We thank you for your trust in our ability to do so and are looking forward to working with you on future construction projects.

Bernd Kieslich
Managing Director
PERI Asia Pte. Ltd.

Fast and safe construction of large slab areas with PD 8 Table System

Midview City at Bright Hill Drive, Singapore

Midview City is a huge integrated business hub which sits on a land area of over 552,000 sq ft. It is situated in the central part of Singapore at Bright Hill Drive. The development will have six 8-storey blocks and one 3-storey terrace block with more than 1.38 million sq ft of prime business space. Construction work using PERI's formwork systems has started in the middle of January 2009.

For slabs, the contractor uses PERI's PD 8 table system which is very suitable for constructing large slab areas. More than 8,000 m² of formwork area have been supplied for constructing slabs. The contractor has been able to achieve a 15 day cycle per floor despite not being able to work beyond 6.30 pm, as the site is near to a residential area. For columns, the VARIO GT 24 Column formwork system with dimensions of 800 mm x 800 mm x 3.60 m has been utilised. Finally, the CB 240 climbing system and VARIO GT 24 Wall formwork systems are being used jointly for the construction of the core walls of the buildings.The project has been scheduled to be fully completed by December 2009.

Contractor
Yee Hong Pte. Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

PD 8 slab tables are positioned neatly at the site.

An overview of the site with various PERI formwork systems.

Lee Fu Liang,
Senior Project Manager:
"I will recommend the use of PERI formwork systems as they are faster, safer and very suitable for projects with large slab areas."

Fast and crane-independent solution with PERI RCS Rail Climbing System

Sky@eleven Condominium, Singapore

Contractor
Tiong Seng Contractors (Pte.) Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

Allan Moreno,
Senior Formwork Engineer:
"The SRS Steel Circular Column is fast and highly efficient as it allows the casting of a 15 m high column to be done in one cast, previously almost unheard of in the local industry."

The lift cores using the RCS Rail Climbing System climbing in advance of the slabs.

Construction work on the luxurious Sky@eleven condominium project located at Thomson Lane has begun in July 2007. The development owned by Singapore Press Holdings Ltd will have 265 large apartments and eight duplex penthouses when completed in 2010. For this project, the contractor is using PERI's SRS Steel Circular Column formwork to construct 15.80 m high columns for the condominium. It is the first time this formwork system is being used in Singapore and casting of a column of such height in one pour was almost unheard previously in the local industry.

Another first for the project involves the use of the RCS Rail Climbing System. This state-of-the-art system comes with mobile self-climbing devices and hydraulic pumps that allows crane-independent climbing as and when necessary. With this self-climbing feature, the RCS is able to improve productivity and saves on expensive crane operations. The RCS can also be fitted with protection panels that completely encloses the slab edges. Consequently, site personnel are protected against the risk of falling from height and strong winds at all times. This improvement in safety would help to increase productivity on the construction site. Besides the RCS, the ST 100 Stacking Tower is being used for shoring of the transfer beams of up to a height of 25 m. For slabs, the contractor is using the light weight SKYDECK aluminium slab formwork system for easy and tireless erection and early striking with the drop-head.

The robust and quick assembling ST 100 Stacking Towers were used for shoring of transfer beams up to a height of 25 m.

The fast and crane-independent RCS Rail Climbing System.

Multiple Advanced Formwork Systems for a World Class Development

Resorts World Sentosa, Singapore

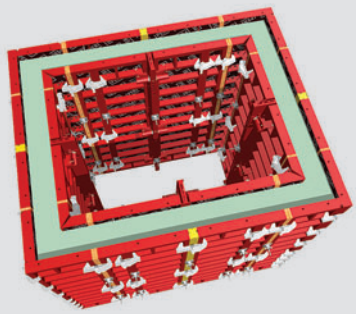
Resorts World Sentosa (RWS) is one of the two integrated resorts currently being built in Singapore and is scheduled to be open in early 2010. The resort is owned by Genting Singapore and is located on Sentosa Island, covering an area of 49 hectares.

Built at a cost of S$6.59 billion, some of the attractions and facilities the resort will have include Southeast Asia's first and only Universal Studios theme park, six hotels with different themes and the world's largest oceanarium.

Contractor
Kajima-Tiong Seng Joint Venture
Field Service
PERI ASIA Pte. Ltd., Singapore

The prominent red TRIO panels being used at the Resorts World Sentosa site.

PERI TSE
Quick striking of shaft formwork



A world class integrated resort in the making.

Edwin Lee,
Senior Project Manager:
"Given the massive volume of structure works and fast track nature of the Sentosa IR project, usage of PERI has helped us achieved productivities three times that of conventional for varying heights of 6 m to 12 m! Even the sub-contractors are greatly surprised with the productivities their workers are achieving with the PERI systems."

The speed and ease of handling of the ST 100 Stacking Towers resulted In higher productivity.

The ST 100 Stacking Towers could achieve a 14 days cycle for a 1,000 m² area at the RWS.

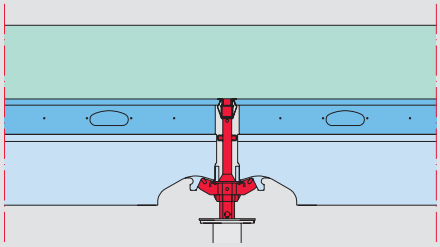
Kajima Overseas Asia Pte. Ltd. and Tiong Seng Contractors (Pte.) Ltd. have formed a joint venture and won the contract to build three of the six hotels in RWS. The contract also include building the resort's main thoroughfare known as Festive Walk, a casino located beneath the Crockfords Tower and a 1,600-seat Festive Grand showroom within Festive Hotel.

To meet the challenges of this fast track project with a massive total formwork area of over 800,000 m², a variety of PERI's formwork systems are being used. The SKYDECK aluminium slab formwork is used in combination with MULTIPROPs to achieve maximum productivity and flexibility for applications varying from 3 m to 6 m floor height. A seven days cycle time could be achieved for a 1,000 m² area.

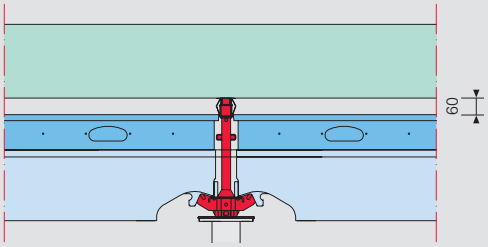
Using the TRIO 3.30 m x 2.40 m panels, retaining walls were easily cast for heights of up to 9 m in one pour achieving off form finish quality without compromising on their high productivity of a three day cycle for a stretch of 25 m x 9 m wall-pour.

Other PERI formwork systems that were used in the project were also able to deliver high productivity and these include the ST 100 Stacking Towers (14 days cycle for 1,000 m² area), SRS Steel Circular Column (one column/day/mould) and the CB 240 climbing system (three days per cycle).

PERI SKYDECK
Early striking after 2 days



Shuttered
The panels and cover strips form the soffit of the concrete.



Drophead lowered
The cover strips and dropheads remain in position while the panels and beams are struck.

Efficient and safe working conditions up to nearly 230 m

Asia Square Tower 1, Singapore

Contractor
Hyundai Engineering & Construction Co., Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

Kim Ju-Han, Construction Manager:
"We have been able to achieve a 5 days per floor cycle with the ACS and RCS climbing systems. I would recommend the use of PERI formwork systems for their speed, safety features as well as good technical support."

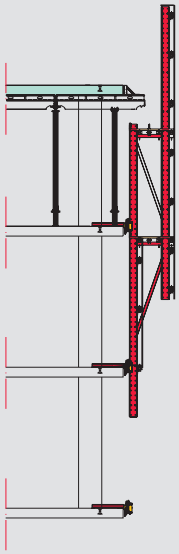
Asia Square Tower 1 is located along Marina View at the Marina Bay area. It is the first of a twin-tower development that will have two million m² of office space, a 280-room five-star hotel and 60,000 m² of retail space.

For columns, the VARIO GT 24 Column formwork system is being used for typical floor height of 3.60 m and up to a maximum height of 12.60 m. For slabs, the ST 100 Stacking Tower is being used for heavy load shoring of up to a height of 12.37 m (from 1st to 3rd storey) and 9.20 m (from 3rd to 6th storey) respectively. In addition, more than 5,200 m² of formwork area of PD 8 table system and PERI MULTIPROP system are being used for casting of the typical floors.

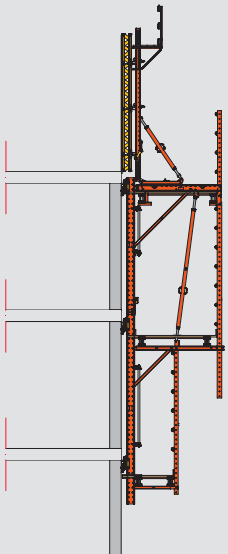
For corewalls, more than 4,500 m² of formwork area are being used. These include the VARIO GT 24 Girder Wall Formwork system, the ACS and RCS Climbing Systems. The ACS R with its high load capacity, is being used as an external platform with a platform length of up to 15 m and formwork height of 4.70 m. On the other hand, the RCS Formwork Scaffolding is being used for the internal platform up to a platform length of 9.75 m. For safety, the RCS P Climbing Protection Panel is being used as a protection screen around the tower to protect the workers against falling from height. Both the ACS and RCS uses a specialised hydraulic-enabled machinery to climb and thus, do not require the use of cranes which could be utilised for other usage.

RCS Rail Climbing System: The modular system for a wide range of climbing applications

The RCS climbing system combines the advantages of existing systems in a newly developed modular concept. Depending on the use, the system can be climbed with the crane or lifted by means of mobile, hydraulic climbing devices. The range of possible assemblies can be easily adapted to meet the project-specific requirements through the modular construction system. Depending on the application, there are two versions: the RCS Formwork Scaffolding and the RCS Protection Panel.



RCS – Climbing Protection Panel
Encloses floors and protects against falling when working at great heights. The completely shielded working area provides protection against wind and weather resulting in increased productivity.



RCS – Formwork Scaffolding
Rail-guided moving of wall formwork with optional self-climbing technology. The formwork is supported on a mobile carriage which can be retracted up to a distance of 90 cm.

High productivity with system formwork

Marina Bay Financial Centre, Singapore

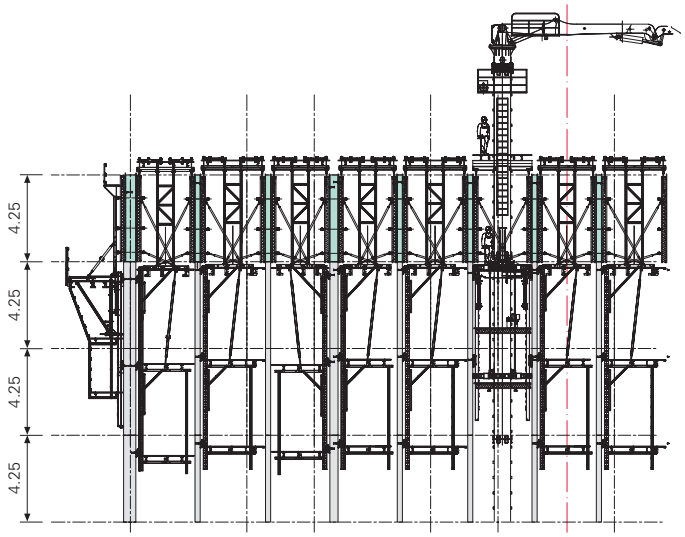
Tower 1 and Tower 2 of the Marina Bay Financial Centre.

Contractor
Kajima-Tiong Seng Joint Venture
Field Service
PERI ASIA Pte. Ltd., Singapore

Masashi Yamamoto, Construction Manager:
"We have achieved a five day cycle per floor (2,880 m² for slab and 4,100 m² for corewall). The system formwork has allowed for higher speed, productivity and a safe work environment!"

Marina Bay Financial Centre (MBFC) Is located on a prime waterfront 3.55 ha site in the heart of Singapore's new downtown. The developer for the project is BFC Development Pte. Ltd. It is a joint venture by three of Asia's well-known property developers - Cheung Kong (Holdings)/Hutchison Whampoa, Hongkong Land and Keppel Land. Kajima Overseas Asia Pte. Ltd. in a joint venture with Tiong Seng Contractors (Pte.) Ltd., have been awarded the contract to construct one 33-storey (Tower 1) and another 51-storey (Tower 2) building. Construction of the buildings for phase 1 have started in September 2007 and is planned for completion by March 2010.

A typical core wall section of Tower 2 with the ACS for external walls and the RCS for internal walls.



Several types of PERI formwork systems are being used for this project. The VARIO GT 24 Wall formwork, the ACS Self Climbing System and RCS C Rail Climbing System are being used to construct the lift cores. A steel tower has also been specially designed and built to work with the RCS to allow it to climb in sequence with the ACS. In addition, the RCS P safety screen which auto-climbs, is used around the perimeter of the building to provide protection.

On the other hand, the PD 8 table system and ST 100 Stacking Towers are being used for slabs. The beam and slab tables of the PD 8 table system for this project, have been designed to merge into one so as to minimise movement of tables and to reduce the cycle time.

Self-climbing technology and large slab tables minimise crane times

Marina Bay Sands®, Singapore

The three concave-shaped hotel towers dominate the city skyline and each has 55 floors that will be connected using the Sands SkyPark® on the roof at a height of nearly 200 m.

Although the three hotel towers are still identical with regard to the height and number of floors, the forms of the respective building elements nevertheless have considerable differences in terms of the base width, curvature radius and lateral offset dimension. Furthermore, the individual floors are also offset from one another in a longitudinal direction.

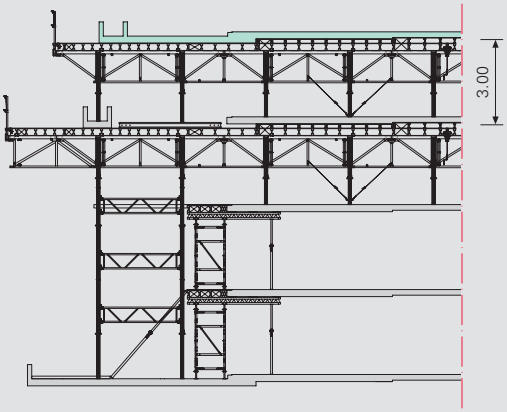
Only two cranes per tower are available to the construction crews. Thus, PERI engineers created crane-independent and crane-saving formwork solutions for the core walls and floor slabs respectively. With the help of ACS self-climbing technology and the large-area SKYTABLE slab tables, crews can finish a complete floor with a standard height of 3.00 m in only four days. In order to be able to achieve this, the elevator shafts are climbing three cycles in advance. For the 25 cm reinforced concrete slabs, a total of 110 SKYTABLE slab tables are required for constructing two complete floors in each case. With SKYTABLE large-area slab tables, which are up to 20 m long and 5 m wide, close to 100 m² of slab formwork are quickly and safely moved with only one crane lift. By means of a lifting mechanism and the chain guidance shoe for transferring the force at the slab edge, the table can be pulled horizontally from the building and then lifted immediately to the next shuttering position.

Using MULTIPROP aluminium slab props, a large lowering height is achieved – with slab offsets of up to 20 cm and, at the same time, 50 cm parapet wall heights, this is an enormous advantage. In addition, the MULTIPROP props can be connected by means of MRK frames in order to form towers. Thus, SKYTABLE tables can be flexibly used for the intermediate storey heights of almost 9.00 m as well. From the outset, PERI engineers took into consideration the continuously changing geo-

metry with their solution and used an unchanged SKYTABLE framework construction for the entire height of the building. This has meant that any table modifications required has been kept to an absolute minimum, and time-consuming, costly conversion work which could lead to misapplications have been avoided as far as possible.

The ACS self-climbing system is the optimal formwork scaffolding for the altogether twelve elevator shafts constructed in advance. With the help of ACS, the different-sized shafts with dimensions ranging between 2.30 m and 10.10 m can be shuttered, struck and climbed in four day cycles without the need of a crane. Altogether, five safe and secure working levels climb at the same time to the next section: two platforms for forming, reinforcement work and concreting the shaft walls as well as three finishing platforms for pre-tensioning the subsequent storey slabs. In combination with CB climbing scaffold and the VARIO GT 24 girder wall formwork, ACS has thus optimised the operational sequences on the construction site.

Ahn Yoon Chul,
Engineering Manager:
"PERI has provided us with very fast and good technical support from all levels of its organisation. From the in-house design team, on site support and all the way from the PERI HQ in Germany."



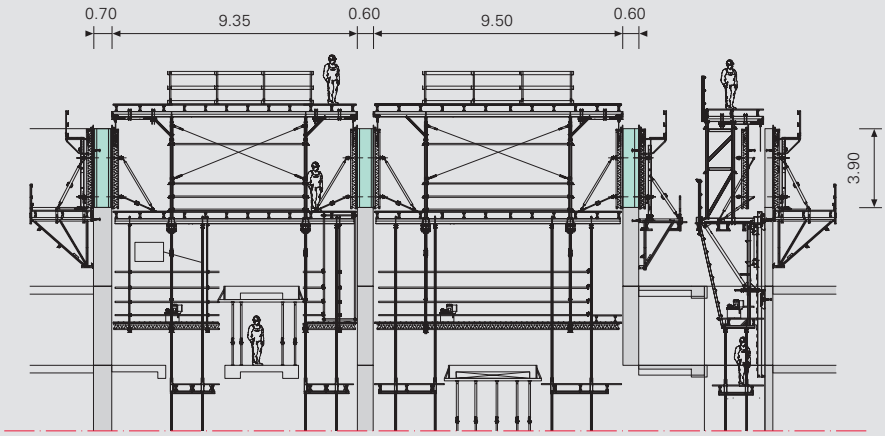
A typical section view of the SKYTABLE large-area slab tables.

Contractor
SsangYong Engineering & Construction Co. Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

PERI SKYTABLE: with only one crane lift, 100 m² of slab formwork is quickly and safely moved. During the moving procedure, the operating personnel are always positioned in a safe and secure place on the slab edge.

In each case, two floors are simultaneously shuttered with the SKYTABLE large-area slab tables.

Typical section showing core wall with ACS self-climbing formwork.



Main contractor
Sembawang Engineers & Constructors Pte. Ltd.
Sub-contractor
Wai Fong Construction Pte. Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

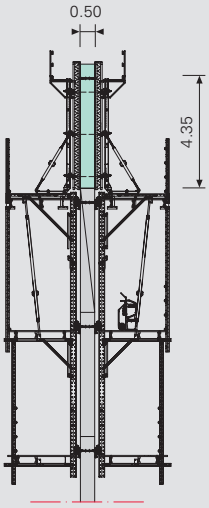
A top down view of the two horse-shoe-shaped theatres.

Yap Kok Keong,
Formwork Supervisor
(Wai Fong Construction Pte. Ltd.):
"PERI formwork systems are fast and easy to use. They have also enabled us to save up to 50 per cent time and manpower."

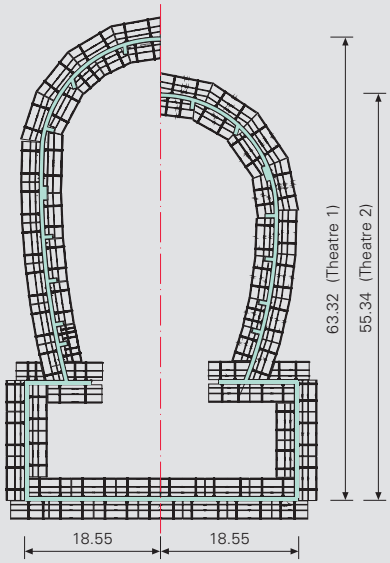
Optimised Speed and Solution for theatres with unique design

Marina Bay Sands® Theatres, Singapore

RCS Rail Climbing System in the background and VARIO GT 24 Wall formwork system in the foreground.



A typical section view of the RCS platform.



A plan view of the two theatres with the complicated shape.

The walls of the Marina Bay Sands® theatres are constructed using PERI's RCS Rail Climbing System and the VARIO GT 24 Wall formwork system.

One of the key challenges faced by the contractor was the horseshoe-shaped theatre walls having incorporated columns protruding non-radially, resulting in very sharp angles which made handling of formwork extremely difficult. In spite of the difficulties, the contractor was still able to achieve a casting cycle of two to three days per wall panel (excluding M&E work) using PERI's formwork systems. The 4,000 seating capacity theatres are expected to be ready in 2010.

Customised Solution for Safe and Fast Construction

Sentosa Monorail Mobile Protection Platform, Singapore

Contractor
Kajima-Tiong Seng Joint Venture
Field Service
PERI ASIA Pte. Ltd., Singapore

The Sentosa Monorail Mobile Protection Platform (MMPP) project involved the construction of a tunnel to cover part of the existing rail track and a new monorail station. The major challenges faced by the contractor was to ensure public safety amidst the tight construction schedule and limited working hours, as construction work could only be carried out during non-operating hours of the monorail service. To meet the requirement for speed, safety and cost effectiveness, the PERI UP system scaffolding was used in combination with the ST 100 and GT 24 girders to construct the MMPP. The lattice beam of the PERI UP could support the designed load for a span of 12 m without jeopardizing the total weight of the protection tunnel structure. In addition, the ease of assembling and dismantling of the ST 100 and GT 24 girders, coupled with its high load capacity have solved many heavy shoring problems at the site. By attaching roller wheels to the ST 100 have also made the whole system mobile.

Allan Rowel, Formwork Engineer:
"PERI systems are well designed and the components made it easy for us to understand it fast and be able to explain to our formwork workers on site. I must admit that without the PERI system especially the ST 100 we may not be able to achieve our casting deadlines."

Quality finished and increased productivity with system formwork

SingTel Data Centre, Singapore

Contractor
Kienta Engineering Construction Pte. Ltd.
Field Service
PERI ASIA Pte. Ltd., Singapore

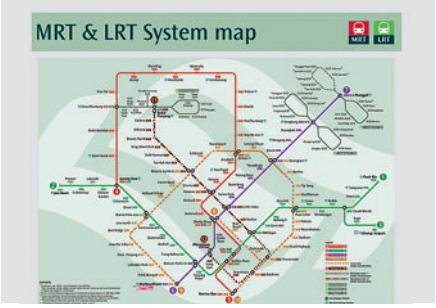
Wong Kim Choy, Senior Project Engineer:
"PERI formwork systems save time and labour. Less cleaning of the formwork is needed and the quality of the finished concrete is also good."

A nine storey data centre is currently being built for SingTel at Kim Chuan Road. The 1st phase of the construction work saw the use of PERI's VARIO GT 24 Wall formwork system for constructing pile caps of the building. Each set of the formwork measures 5.55 m x 5.55 m x 3.00 m. The 2nd phase of the project involved the use of a variety of formwork systems. For slabs, the PD 8 table system and ST 100 Stacking Towers in loose form were being utilised. The typical floor height was 5 m and the largest PD 8 table was 5.50 m x 3.60 m. A particular section of the building also required the PD 8 table system to be erected up to three storey or 10 m high. The total formwork area supplied for each floor was approximately 3,960 m². For columns, the VARIO GT 24 Column formwork system with the size measuring 1.50 m x 1.50 m x 4.50 m were used. Finally for the liftcore walls, a combination of the VARIO GT 24 Wall formwork system and the CB 240 Climbing System were being used in synergy to create the passenger and cargo lifts of the building.

PERI Solutions for Infrastructure Projects

The MRT Circle Line, Singapore

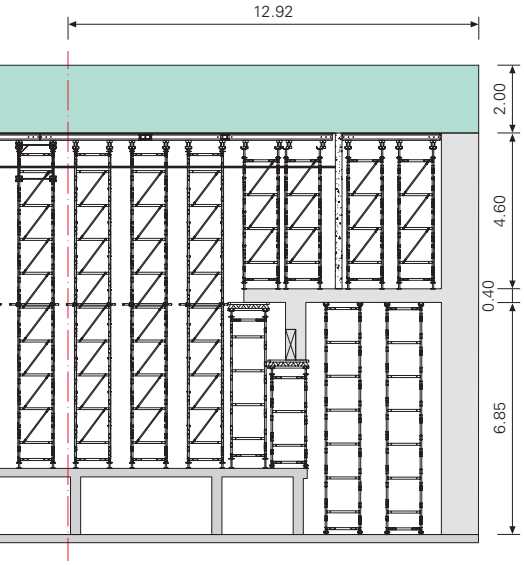
Map courtesy of Land Transport Authority, Singapore.



The Circle Line (CCL) which is set to be fully completed from 2010 onwards, will cut travelling time and allow commuters to bypass busy interchanges like City Hall and Raffles Place. Costing $ 6.7 billion, the CCL will be a fully underground orbital line linking all radial lines leading to the city. It will be 33.3 km long with 29 stations.

A combination of PERI's ST 100 Stacking Towers, the MULTIPROP system and the VARIO GT 24 Girder Wall formwork system were used in the construction of some of the 6 stations and a certain section of the tunnels. The stations were Bartley, Tai Seng, MacPherson, Paya Lebar, Dakota and Mountbatten. In all cases, PERI's formwork systems were able to meet the challenges of working within the confined space underground and with multiple struts above. The ST 100 Stacking Towers with height from a few metres up to 10 m, provided shoring for slabs that were up to 2 m thick.

A typical formwork design for the construction of 2 m thick roof slab.



Danilo M. Soriano,
Senior Engineer, ECON-NCC JV:
"We are very impressed by PERI's delivery and logistics capabilities. They have been able to accommodate our request for huge quantities of materials even at short notice and always deliver on time."

Steve Ng,
Senior Construction Manager,
Tobishima Corporation:
"PERI's formwork systems are of good quality and can be used with much ease. This has resulted in a 20 % to 30 % saving in time and labour for our project."

Li Jiang, Project Manager, Nantong Qidong Construction Pte. Ltd.:
"We have chosen to use PERI formwork system as it is fast and the price reasonable."

L.B. Zhang, Site Manager, CGW Construction & Engineering (S) Pte. Ltd.:
"The ST 100 Stacking Towers are easy to use as there are less accessories needed. We also find the engineering design and support provided by PERI to be excellent."

Yutaka Nakajima,
Senior Section Manager (Stations),
Nishimatsu-Lum Chang JV:
"We would recommend the use of the ST 100 Stacking Tower as it is simple, fast and easy to use."

Increased speed and productivity with PERI UP T 70

Cedar Girls' Secondary School Upgrading, Cedar Avenue, Singapore

Justin Wong,
Senior Manager:
"The PERI UP system is an ideal external facade scaffolding that has been tested and approved by Authority. We have been able to increase our productivity as it is a safe, integrated and easy-to-use system."

Upgrading works are currently being carried out at the original site of Cedar Girls' Secondary School. The construction work will involve the erection of two blocks of 2 to 4 storey buildings and other ancillary buildings. The contractor is using the PERI UP T 70 scaffold system for external facade work of the school buildings.

One distinct advantage of the PERI UP is the guardrail in advance of the next level is assembled together with the T-frame from the lower secured level. As such, the scaffolder is already in a safe position when entering the next level. This forms the basis for a quick and safe working condition. Therefore, it is not surprising that the contractor have found the PERI UP to be a fast and easy-to-use scaffold system.

ST 100 Stacking Tower – The efficient shoring system for civil engineering

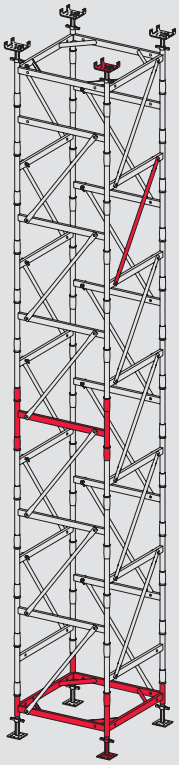
ST 100 is quickly assembled.
All system components are simply slotted together without any bolts or pins.

ST 100 requires only five system parts.
This reduces stock quantities and increases the utilisation. Four parts are often sufficient, if diagonals are not required. This means the ST 100 is also very cost-effective for low heights.

ST 100 planning is done very quickly.
With only one frame size, every working height is simple to plan and organize without the need of combination tables.

ST 100 stacking tower is type tested.
Expensive and time-consuming static calculations are therefore unnecessary.

The five system parts of ST 100
- base frame
- stacking frame
- diagonal brace
- base spindle
- head spindle



The Troika project challenges constructions skills

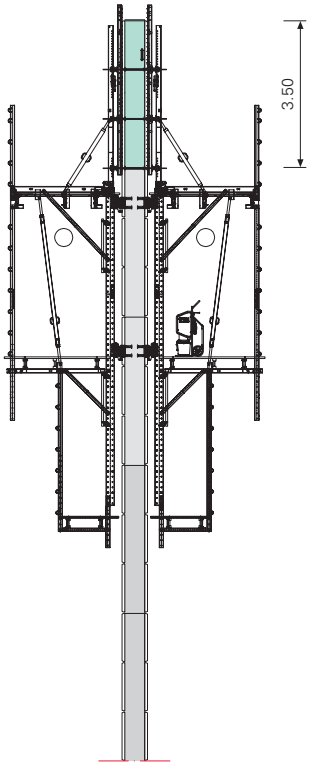
The Troika, Kuala Lumpur, Malaysia

'Perfectly vertical fair-faced concrete feature walls', is the key design feature of the project. Designed by Sir Norman Foster and towering 50 stories over Kuala Lumpur's city centre. The Troika comprises of three towers at 39, 45 and 50 stories height.

Contractor
IJM Construction Sdn. Bhd., Malaysia
Field Service
PERI Formwork Malaysia Sdn. Bhd., Malaysia

Foong Kok Foo, Senior Construction Manager:
"Environmental protection is very important for us. We are spearheading the trend of working with reusable systems instead of disposable material. PERI's systems are important steps forward for us to be environmentally friendlier."

Due to the limited space on site, it is critical that formwork, scaffolding and building materials are easy to handle and re-use. Since working hours are restricted in residential areas, formwork that reduces downtime and speeds up the construction process is a prerequisite. "The key design feature of The Troika are the shear walls. IJM has applied a new construction method for this building, a technique that is not commonly used in Malaysia," says Tarun Deep Dhatia, Construction Manager of IJM. IJM uses precast components for the shear walls. The design of the shear walls, combined with a specific sequence of constructing the building presented immense challenges that the company had to tackle before construction could begin.



The design of the semi-precast shear walls, combined with a specific sequence of constructing the building, presented immense challenges which had to be tackled before construction could begin.

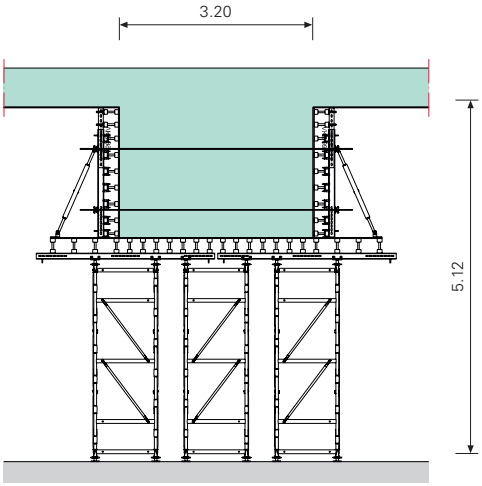
The three towers have ten, nine and six such shear walls. "We had to develop a new technique to bring Foster's dream to reality. In order to do so, we needed to work extremely close with the formwork supplier," states Mr. Foong.

Together with PERI, IJM found an innovative way to construct the building. By using the Rail Climbing System (RCS), the shear walls are being constructed ahead of the slabs. Only once three stories have been completed, can the slab work begin. This requires different teams to work simultaneously. Through the use of this system, the time required to finish each floor was reduced to 7 working days.

Ahead of schedule - with innovative formwork

Kuala Lumpur's City Centre (KLCC), Kuala Lumpur, Malaysia

Lot 171 is rising rapidly and steadily – with the help of several PERI formwork systems.



Construction of "Lot 171", a 60 storey Residential, Commercial and Retail tower complex in Kuala Lumpur is gathering momentum, main contractor Daewoo is confident that the 1,224,000 sq ft development will be completed on time. Various construction methods were evaluated, it was decided that the building's cores would be constructed ahead of the slabs.

In order to facilitate this requirement, the CBC 240 climbing system was commissioned. The CB 240 climbing bracket supports the VARIO Wall formwork which is retracted on roller bearings. The 2.40 m wide working platforms ensure a safe working environment for the workforce in order to clean the formwork and to fix reinforcement. TRIO panel formwork is used for the Retaining Walls. Once assembled, the gang-formed panels are quickly moved into position with the aid of a mobile crane. Fewer components require less assembly time and easy adjustment for both, varying horizontal geometry as well as for varying vertical dimensions.

A number of solutions are used for the construction of the sub-structure. For the slabs, PERI MULTIFLEX system is used. The GT 24 and VT 20 girders are supported by the PD 8 frame tower and ST 100 tower systems for floor heights of up to 6.50 m. The advantage of using this combination is that it can be used for all floor heights as well as for all slab and beam thicknesses required.

In order to provide on going formwork training and support to the construction team, PERI Malaysia has commissioned experienced formwork supervisors to the project. The combined experience of the contractor and the formwork supervisors has enabled the construction team to establish a safe and productive working environment.

Song Ho Jun, Construction Manager:
"We chose PERI Formwork for this project as it gives us the flexibility we need. In addition, we needed to consider safety, environment and cost of ownership. PERI Formwork provides us with all these advantages."

Contractor
Daewoo Engineering & Construction Co., Ltd.
Field Service
PERI Formwork Malaysia Sdn. Bhd., Malaysia

PERI – The Service Provider
We offer more than just products

The broad range of PERI equipment and systems offers the perfect solution for every requirement. However, the PERI range of services goes far beyond production and system equipment sales and rental.

Technical solution

Due to their in-depth understanding of the needs of our customers, our engineers are able to develop the best project-related solution. The services include, if required, static calculations as well as assembly plans for special formwork. Although 90 % of all formwork project requirements can be covered using standard equipment from the broad PERI product range, a special construction is, however, sometimes more cost-effective - and it is exactly here that the engineers apply their expertise with great effect.

Logistics

PERI has the world's largest rental equipment pool and supplies its customers reliably, fast and with a high level of flexibility. "Just in time" deliveries and return deliveries - according to the particular construction schedule.

For very large material requirements, the local team works closely with other logistic locations thus ensuring an optimal delivery service to the construction sites.

Onsite support

PERI formwork instructors provide an extensive professional briefing on site. This means that any improper handling is avoided and the risk of accidents is greatly reduced. Using the systems even more efficiently accelerates the construction progress.

Training

Our training programme includes both seminars with specified content and individualised courses. In so doing, we support our customers by enabling them to find out about the latest formwork and scaffolding technologies for more efficiency and to be able to pass on this knowledge.

The illustration featured in this brochure are photographs taken at a particular time on a construction site. This is why the safety details shown cannot be considered as final.

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Fast
The standard field is formed using only three system parts: elements, plywood and props. The easy to handle parts and an element weight of 9.5 kg/m² simplify the forming process.

Safe
The girder grid design of the GRIDFLEX automatically forms an accessible working area which provides a high level of safety when laying the plywood sheets.

Flexible
The telescopic function provides a flexible two-dimensional adaptability in both transverse and longitudinal directions with the elements.

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Step Up to Integrated Advanced Formwork Systems

BCA Seminar | Workshop

Can improved safety, productivity, quality and a sustainable environment all be achieved at the same time in a construction process? The answer was obvious to the more than 280 people from the construction industry who attended a recent seminar and workshop on "An Evolutionary Journey – Conventional to Integrated Advanced Formwork Systems".

The seminar and workshop was organized by the Building and Construction Authority (BCA) and supported by PERI Asia Pte. Ltd. The three invited speakers at the event were Edwin Lee from Tiong Seng Contractors Pte. Ltd., Markus Schade and Marcus Beez both from PERI GmbH. The speakers have provided the participants consisting of builders and safety professionals, an insight and practical examples on how the use of integrated advanced formwork systems and 3 D planning can lead to improved productivity and quality without compromising on safety and the environment.

Besides the seminar and workshop, there was also a mini-exhibition that showcased new generation and integrated advanced formwork systems that can increase safety levels and labour productivity on job sites.
The exhibition provided an opportunity for the participants to see for themselves the benefits of using integrated formwork systems as compared to conventional formwork.

The event has been very well received from both local and some overseas participants. They have expressed their wish for such an event to be held again in the future.

Nguyen Hong Viet,
Hanoi Branch Director,
COFICO:
"The seminar was very professionally organized and easy to understand. It has given me a better understanding on the benefits of using integrated formwork systems for construction."

Mylene V. Aguinaldo,
Formwork Engineer,
Tiong Seng Contractors Pte. Ltd.:
"The seminar/workshop has been quite informative. For us, who do the formwork design/drawings, it has created the passion and excitement to learn more and advance our knowledge in 3D formwork planning. It is also good to be able to see actual new products such as the GRIDFLEX as shown in the exhibition. Lastly, I am proud to be in a company that uses these advanced integrated formwork systems from PERI."

Puah Sze Hwee,
Quantity Surveyor,
Kajima Overseas Asia Pte. Ltd.:
"The video that was played at the seminar gave everybody a better understanding on the use of system formwork and the time savings achieved as compared to conventional formwork. It successfully proves to us the efficiency and safety in the use of integrated formwork systems."