



GUIDELINE

ENDLESS CREATIVITY TO OPTIMIZE IMAGINATION

CIVIL ANALYSIS & PHOTOGRAPHY COMPETITION

2023

BY:
CIVIL ENGINEERING
DEPARTMENT STUDENT'S
COUNCIL
PETRA CHRISTIAN UNIVERSITY



ABOUT CIVIL ANALYSIS AND PHOTOGRAPHY 2023

Civil Analysis and Photography is an international level online photography and analysis competition that all levels of society can participate. This competition consists of one round. Later the works of participants that have been validated by the committee will be exhibited at the Petra Civil Expo 2023 construction exhibition so that it has the potential to be seen by more than 800 people who will take part in the exhibition. Not only an online exhibition, this year Civil Analysis and Photography also held an onsite exhibition located in the Q building of Petra Christian University (Surabaya, Indonesia). Later the participants will make infographics in accordance with the creativity and imagination of each participant that still leads to the rules that have been set.

BACKGROUND ISSUE

In today's modern era, many changes are happening very rapidly, especially in the field of infrastructure, ranging from various forms to variations in the types of materials used in them. With innovations being developed every year, construction workers and ordinary people who want to enter the world of infrastructure must master several aspects needed, one of which is how to analyze a building and also imagine the structure.

In accordance with this, the theme of Civil Analysis and Photography (CAP) 2023 is Endless Creativity to Optimize Imagination, which means that the general public and construction actors are expected to be able to carry out structural analysis, think creatively and be able to optimize it into a work. Analysis in this case helps the participants to be able to have information about the structure of a particular building so that the participants do not only consider the aesthetics of the building. This will certainly help the general public to be able to understand the structure of the buildings around them.

TIMELINE

- **Publication, Registration, Submission**

Day, Date. : Monday, 28 February 2023 – Friday, 28 April 2023
Location : *Online via website* (pce.petra.ac.id/2023/cap.php)
Time : 00.00 - 23.59 UTC+

- **Judging**

Day, Date. : Wednesday, 2 May 2023 – Monday, 10 May 2023
Location : *Online via website* (pce.petra.ac.id/2023/cap.php)
Time : 00.00 - 23.59 UTC+

- **Live Construction Exhibition**

Day, Date. : Friday, 12 May 2023 – Sunday, 14 May 2023
Location : *Online via website* (pce.petra.ac.id/2023/cap.php)
Amphitheater Q Hall Petra Christian University.
Time : 08.00 - 20.00 UTC+

- **Awarding**

Day, Date : Sunday, 14 May 2023

Location : *Online* via Instagram CAP (@cap_petra) and Auditorium Q Petra Christian University.

Time : 18.00 - 20.45 UTC+

SUBMISSION GUIDELINE

Public Requirements

- In one infographic, participants are allowed to display several photos of building structures. Photos must be submitted in JPG or JPEG format in the website column provided.
- Photos that are included in the work must be original photos, not cartoons or works of drawing or making themselves.
- Participants are allowed to edit existing photos, without changing the shape at all. Participants are allowed to use color or black and white photos.
- Participants can create infographics by analyzing all types of infrastructure such as bridges, multi-storey buildings, monuments, and others.
- Participants are allowed to collect more than 1 analytical work, but the buildings analyzed are different.
- Participants are allowed to take photos via the internet with a note that they must display the sources in the infographic.

- Participants must provide the title (no plagiarism) of the work that has been made and provide the team name, participant name, agency origin, and team nationality located under the title.
- If the photo in the work is an original photo (self-shot), the participant has the opportunity to win the best photo award.
- Participants are prohibited from uploading photos with elements of racism, sadism, pornography, etc. If it violates, the participant will be disqualified.
- The work must be written in English with a minimum of 250 words.
- The paper size used is A3 (landscape).
- References used by participants must be included in the infographic.
- Mandatory file in PDF format (Team file format: Team name_Country of Origin_Institution/General origin). However, individual participants can write (participant's name_country of origin_institution/general origin). Example: Patrick Mario_Indonesia_UK Petra.
- Files uploaded by participants are a maximum of 20MB in size.

Public Requirements

- Open for public, for local and International.
- Participants can participate in the competition individually or in teams (maximum 2 members)
- Registration can only be done during the registration period.
- Registration is only through online registration (via website), and participants must fill in all the requirements (pce.petra.ac.id/2023/cap).

Photo Entries

- Participants are required to submit photos contained in the infographic in the photo collection column on the website. Team photo collection can be submitted in the format (Team Name_No Photo). If individuals can submit in the format (Participant Name_No Photo). Example: Patricia Jocelyn_01
- Files uploaded by participants are a maximum of 20MB in size.
- The file format that participants must submit is .PNG/.JPEG/.JPG/150 dpi format (recommended).

Analysis Entries

- Peserta dapat membuat infographic dengan segala jenis infrastruktur
- Peserta hanya diperbolehkan mengumpulkan 1 karya analisis
- Karya harus ditulis dalam menggunakan bahasa Inggris
- Karya harus mengandung 150-200 kata
- Batas terakhir pengumpulan karya Jumat, 14 April 2023
- Referensi yang digunakan oleh peserta wajib dicantumkan jika menggunakan jurnal atau artikel
- File wajib dalam format PDF

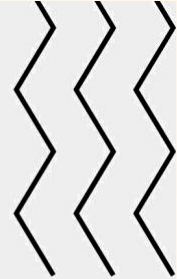
DISCLAIMERS

- Participants must obey and comply with the terms and conditions made by the organizers. If unwanted things happen, the administrator has the authority and has the right to make decisions.
- Participants are not allowed to correct their work if the work has been submitted.
- Entries that are not related to the theme of the competition will be immediately disqualified.
- Organizers cannot accept any kind of plagiarism.
- Works that are not original (have already been published, included, presented, and/or used for communication media) will be immediately eliminated.
- The work that has been submitted will become the property of the organizer and the organizer has full rights over the publication of the work.
- Participants are responsible for all consequences of copyright infringement and agree to be responsible for bearing all consequences due to copyright infringement.
- Works that do not meet the evaluation criteria and submit more than the allotted time will be immediately eliminated.
- Participants are not allowed to withdraw from the race. If the participant withdraws, the registration fee is non-refundable.
- The organizer has the right to change the rules at any time and inform participants.
- Inaccuracy in reading the provisions will affect the results of the assessment.

JUDGING



No.	Criteria	Percentage
1.	Uniqueness of the Building	20%
2.	Infographic Creativity	20%
3.	Originality	10%
4.	Photography	25%
5.	Building Analysis	25%

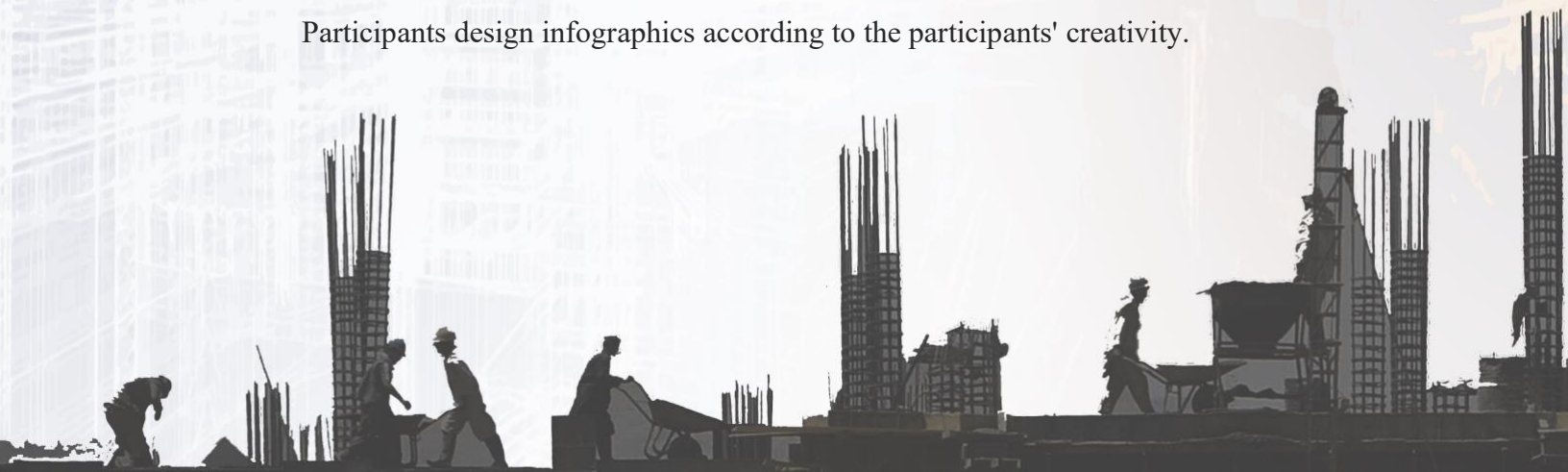


1. Building Uniqueness

Participants choose unique and interesting infrastructure and can explain why the infrastructure is considered unique and can also include fun facts about the selected infrastructure, selected infrastructure specifications, etc.

2. Infographic Creativity

Participants design infographics according to the participants' creativity.



3. Originality

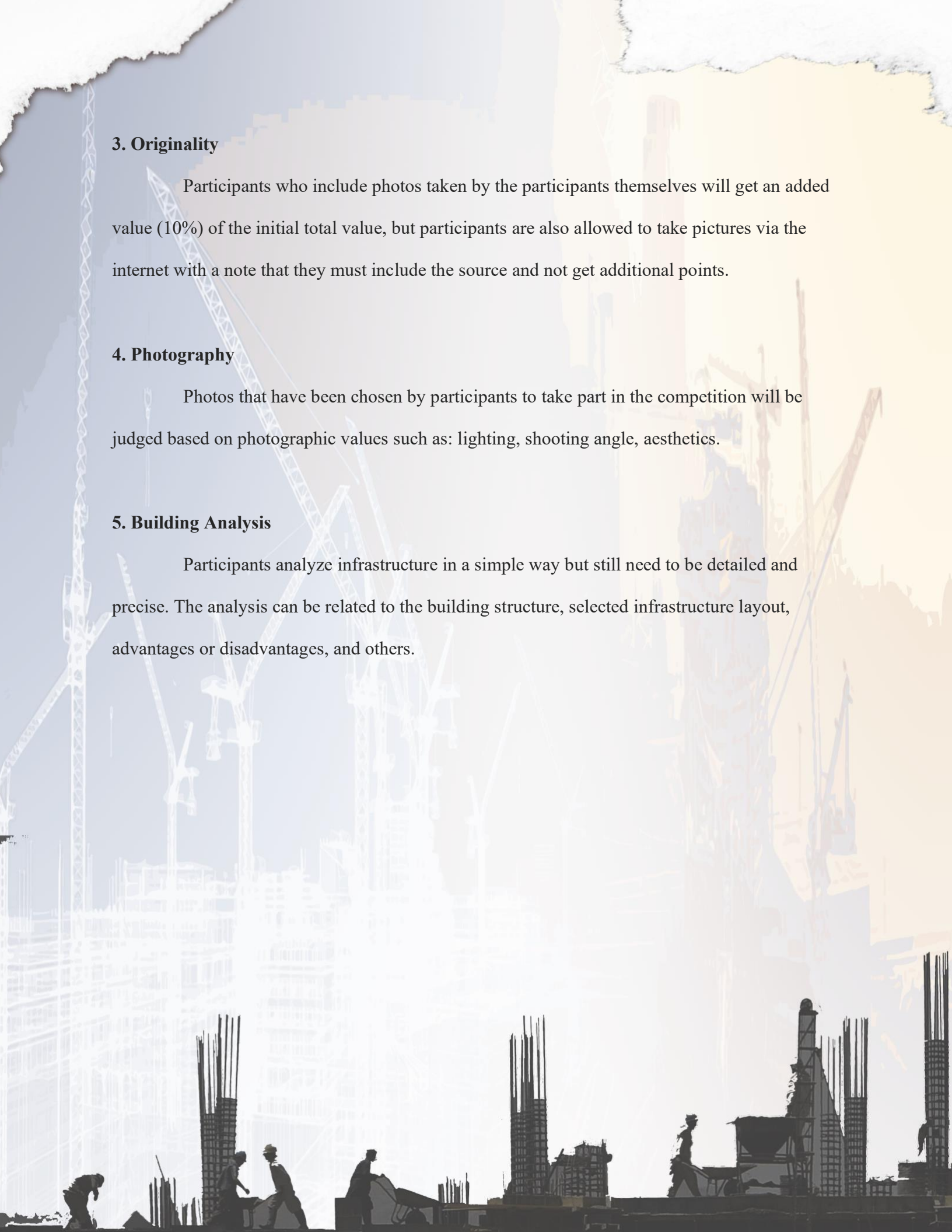
Participants who include photos taken by the participants themselves will get an added value (10%) of the initial total value, but participants are also allowed to take pictures via the internet with a note that they must include the source and not get additional points.

4. Photography

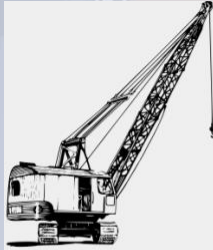
Photos that have been chosen by participants to take part in the competition will be judged based on photographic values such as: lighting, shooting angle, aesthetics.

5. Building Analysis

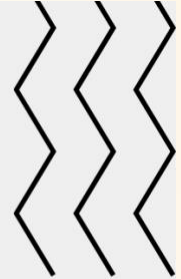
Participants analyze infrastructure in a simple way but still need to be detailed and precise. The analysis can be related to the building structure, selected infrastructure layout, advantages or disadvantages, and others.



PRIZES



Category	Prize
Champion	IDR 1.600.000 (USD 105)
Runner Up	IDR 1.200.000 (USD 80)
Best Photo	IDR 325.000 (USD 21)



- ◇ The Best Photo title can be won by all participants who do not take pictures from the internet. But by doing the photos themselves. (Participants who won 1st and 2nd place can also get the title of The Best Photo)
- ◇ 1 USD = IDR. 15,000
- ◇ Every participant who takes part in Civil Analysis and Photography 2023 is entitled to a competition certificate



EXAMPLE



LOTTE WORLD TOWER



The fifth tallest building in the world, Lotte World Tower, is located in Songpa-gu, Seoul, South Korea. This building has 123 floors and 6 basement floors with a height of 555.7 m and is used as a multifunctional building. It was built from 2011 to 2016, and opened to the public on April 11, 2017. The architect of this building is Kohn Pedersen Fox.



From floors 2 - 86 and the top of the building using a slab made of steel rods with a slab-on-truss deck system, from floors 87 - 101 using a flat slab deck system (925 - 300 mm thick) with drop panels around the columns, while floors in the basement to the first floor are made of reinforced concrete.

Deck Slab

There are 8 mega columns around the building that handle 40% of the tower load. The mega-column on the ground floor measures only 3.3 x 3.3 m, a bit small compared to other buildings of almost the same height, but still meets the requirements. The high strength concrete used for this column is 70 - 80 MPa.

Mega Columns

Located in the center of the building and extending up to the 123rd floor. These core walls handle 60% of the tower's load. The high strength concrete used for the core walls is 60 - 80 MPa.

Core Wall

Consists of 108 steel pillars with a diameter of 1 m and a depth of 38 m. The mat foundation size is 72 x 72 x 6.5 m and consisting of 4200 tons of steel reinforcement and 60000 tons of high-strength concrete. This foundation is able to withstand 750000 tons of vertical load generated by the tower, is resistant to wind speeds of 80 m/s, and earthquakes of up to 9 on the Richter scale.

Mat Foundation

The Sky Bridge is 541 meters above road level



One of the highest observation decks

Steel Diagrid 'Lantern'

There is a diagrid structure at the top of the building, namely on the 102th floor and above which contains offices, museums, and observation rooms. In addition, the tapered shape of Lotte World Tower creates challenging structural complexities, but the structural design of the building is effective at minimizing wind loads.



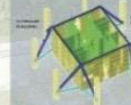
Steel Belt Truss

There is a series of steel belt truss that channel the diagrid structure to the column configuration on the hotel floor, as well as the column on the office and office floors. Steel belt truss are available on floors 72 - 76 and 104 - 107.



Steel Outrigger Truss

There are two levels of outriggers on floors 39 - 44 and 72 - 76 that tie around the mega-columns to the concrete core to control horizontal and vertical movement of the building due to wind loads.



EVY ARIANI - PETRA CHRISTIAN UNIVERSITY - INDONESIA



MERDEKA PNB 118



General Information

Height : 678.9 m
 Floor Count : 118 floors
 Floor Area : 292,000 sq meters
 Location : Kuala Lumpur, Malaysia
 Main Contractor : Samsung C&T
 Construction Date : July 2014-Late 2022

Design & Shape

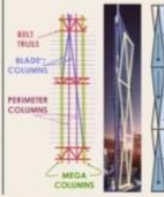
The tower is designed as a crystalline form, diamond-shaped glass façade derived from a traditional Malay songket pattern outline employed in both plan and elevation. The unique design of its spire were inspired by the silhouette of the prime minister's gesture when he outstretched the hand during the proclamation of the country's independence

Foundation

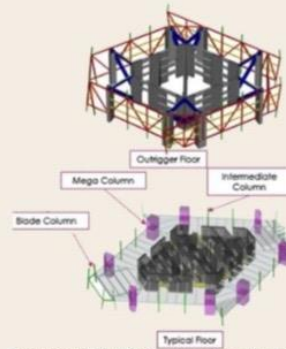
To support the structure on top, 137 cast in place bore piles, with each 2.2 meters in diameter and extending 60 meters in length and capped with a four meter thick raft foundation were built.



Structural Concept



Trusses that are vertically aligned are created by an array of blades. This kind of arrangement will allow the gravity loads to distribute downward, without creating a tendency to lean either to the right or to the left. Merdeka 118 also uses an corewall, columns, outrigger and belt truss system



Merdeka PNB 118 is primarily a steel-framed building with a reinforced concrete megastructure to ensure lateral stability.

Core Wall & Mega Columns

Central core wall were casted using self climbing formwork. Steel rails bolted to the core support a giant movable platform that carries the formwork section as it climbs the rails, workers lock the formwork when pouring concrete and unlock it when the concrete hardens, then the hydraulic pushes the platform upwards, bringing the formwork up the tower to repeat the process. This system reaches a new level in a little as five days. The core wall is surrounded with 8 mega concrete support columns near the perimeter

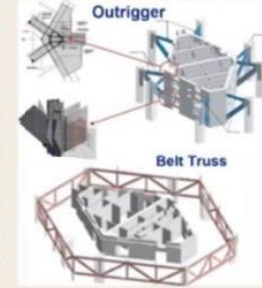
Outrigger

As the construction approaches the fortieth floor the worker must tie the concrete core to the eight mega column. A very tall building must want to twist, torque, lean and could start to move independently. To secure it, the engineers insert giant pieces of steel into concrete columns at three key levels of the tower and connect it to the core with an enormous diagonal arm called outriggers. This ties the column and core together allowing them to support each other and move as one.



Belt Truss

For extra stability at the same level, engineers built huge steel trusses that grip the tower like a belt. Structural system made out of core wall, mega columns, six belt trusses and three outrigger zones will create a rigid structure capable of resisting lateral forces such as seismic and wind load.



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