



10

YEARS OF
QUALITY
SERVICES &
VALUE ADDING
SINCE 1999



VISION

To obtain the hallmark for quality services, technical excellence, reliability and safety.

OBJECTIVE

To provide innovative & economical design and to ensure safety & ease of construction.

VALUES

We value our staff for their creativity & commitment to quality

We instill teamwork in our staff to ensure best solution for our clients.

We uphold integrity in all our dealings with our clients and colleagues.

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**Tan Sri Dato'
Ir. Jamilius Hussien
Chairman
G&P Professionals Sdn Bhd**

"Everyone has a little extra. When combined, all tasks are attainable"

It gives me great pleasure to be able to say a few words to congratulate G&P Professionals Sdn. Bhd. on its 10th anniversary celebration.

Although I have been the chairman for only four years (2005 - 2009) out of the 10 years this consulting company has been established, I am proud to say that I am impressed with the company performance. It has an organisational structure that supports the company vision. Within the structure it has established quality control systems, research and development, training, knowledge management and above all the spirit of sharing.

It has been managed diligently by Ir. Dr. Gue See Sew whom in my opinion is a capable and dynamic person. I am not surprised that G&P has been growing at a rate of about 30% per year for the last 10 years. I am also confident that G&P will continue to grow and be a prominent ONE-STOP engineering consultancy group in Malaysia and the region.

I therefore wish everyone all the best and I am proud to be part of this vibrant and dynamic group.



**Ir. Dr. Gue See Sew
Chief Executive Officer
G&P Professionals Sdn Bhd**

"Challenge the Norm - Excel Through R & D and Innovation"

Looking back 10 years ago, Ir. Tan Yean Chin, Ir. Liew Shaw Shong and I founded Gue & Partners Sdn Bhd (now known as G&P Professionals Sdn Bhd), a geotechnical consultancy firm, in September 1999. We started off with only five staff at that time including myself.

We started with a clear focus on two core values which are quality control and value adding to our clients so that our clients get top quality output from our services. We did that by emphasizing on checking, reviewing by directors and subsequently added with input from external reviewer.

We then introduced structured training to improve the skills and knowledge of the staff through external and internal presentations and colloquium and now we have up to one structured training per week. This has created the spirit of giving and sharing among our staff.

To further add value and respond to requests and retrieval of information promptly, we also have our own Research and Development (R&D) projects. These have resulted in more self discipline among our staff to improve themselves, to inculcate creativity for more efficient, economical and safe design which will eventually add-value to our clients.

The vision of G&P has always been the same, which is to establish a successful one-stop engineering consultancy firm.

Now, after 10 years, G&P is a group of ten specialist engineering consultancy firms and has more than 200 staff. Today, the Group comprises of: G&P Geotechnics Sdn Bhd, G&P Structures Sdn Bhd, G&P Mechanical & Electrical Sdn Bhd, G&P Infra Sdn Bhd, G&P Maritime Sdn Bhd, G&P Claims & Contracts Sdn Bhd, G&P Project Management Sdn Bhd, G&P Environmental Sdn Bhd, G&P Water Sdn Bhd, G&P R International (Cambodia) Co. Ltd and recently G&P Highway & Transportation Sdn Bhd.

Our subsequent growth directions include having branches overseas and other states in Malaysia as well as venturing into other field of specialisation such as G&P Transport & Highway. The first overseas branch has been established in Cambodia and the next one would be in Hanoi, Vietnam. As for local consultation services, we are keen to expand to Sarawak and Sabah.

We have also been courted by foreign consultants to establish other specialised professional services that are limited in Malaysia. We have established NGI-G&P Sdn Bhd for tunnelling, offshore geotechnics, earthquake design, risk assessment and environmental engineering (such as landfill design & remediation) and ZED-G&P Sdn Bhd for Green Building & Green Technology.

For sustainability and to transform G&P into an institution, a special system called zero-in-zero-out will be introduced, meaning that there will be no individual ownership and staff do not have to pay for the shares of the company but could enjoy the benefits as "shareholders". This system eliminates the troubles of buying and selling of company shares when a senior staff retires.

I would like to thank our partners and staff for their dedication and commitment, without which G&P would not be what it is today. A special thanks must also go to our clients and encouraging friend in various agencies.

ONE-STOP VALUE-ADDING CENTRE

Compliments from our Clients:

"The services provided by G&P's Team is satisfactory. The team is professional, committed and attentive"
by Kinta Samudra Sdn Bhd

"Quick response & professional approach to the solution of the problem"
by Nehemiah Reinforced Soil Sdn Bhd

"Good professional team who are sensitive to the client's needs"
by Jacob Goldie & Toh

"I have a great working experience with your engineers. They are quick & effective to site problems and very generous in sharing their technical knowledge with us"
by Sunrise Bhd

"Excellent professional services & high integrity and ethics rendered by this consultancy company"
by MAPO Industries Sdn Bhd





Gue & Partners Sdn Bhd in year 1999
(Now known as G&P Professionals Sdn Bhd)

In September 1999, Ir. Dr Gue See Sew together with Ir. Tan Yean Chin & Ir. Liew Shaw Shong established Gue & Partners Sdn Bhd (now known as G&P Professionals Sdn Bhd). With only five numbers of staff strength, the company strive to become one of the reputable geotechnical consultancy firm in Malaysia.

After 10 years of consultancy services in the region, G&P Professionals Sdn Bhd has evolved into a One-Stop Value-Adding Consultancy Centre that is able to provide engineering services in the areas of geotechnical, civil & structural, mechanical & electrical, infrastructure, flood mitigation, marine engineering, etc. To date, we have a total staff strength of more than 200 and a total of 10 specialists engineering consultancy firm. Throughout this 10 years journey together, countless hurdles were encountered and together we have overcome them by believing in our value of quality services & value-added engineering product.



G&P Professionals Sdn Bhd in year 2009



G&P Professionals Sdn Bhd - Board of Directors

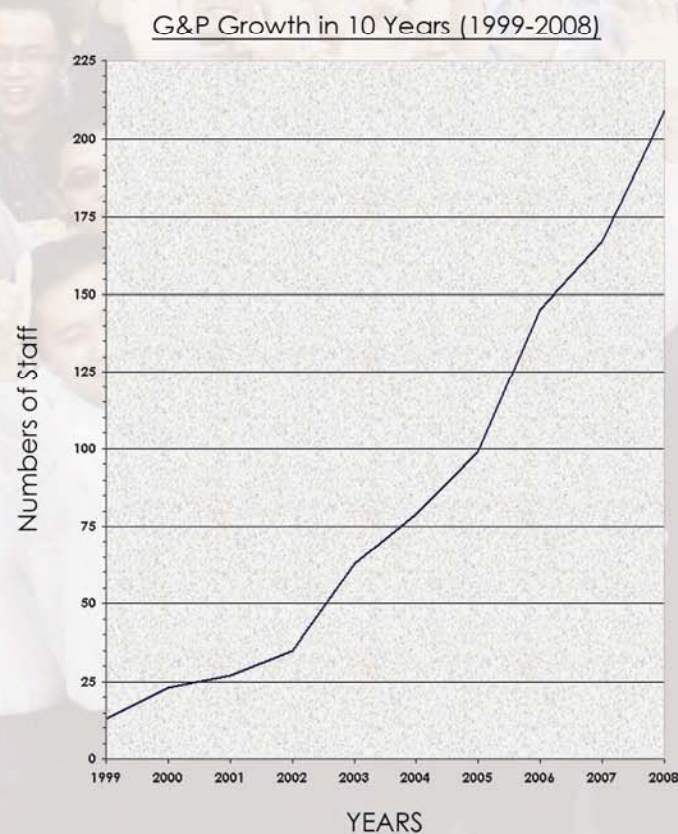
Sitting from left: Ir. Heng Tang Hai, Ir. Dr. Gue See Sew, Tan Sri Dato' Ir. Jamilus Hussien, Ir. Chong Sun Fatt, Ir. Lim Choon Lin
Standing from left: Ir. Lim Sin Poh, Ir. Lim Eng Chong, Ir. Ng Tak Kee, Ir. Peter Leow Cheen Chai, Ir. Liew Shaw Shong, Ir. Tan Yean Chin, Ir. Tan Kok Leong, Ir. Tan Chee Siong



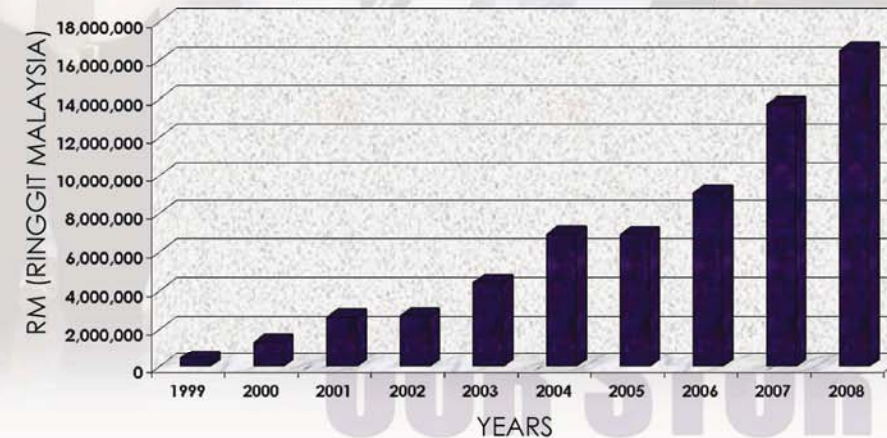
Ir. Hj. Hosni bin Hj. Bardan
Director
G&P Professionals Sdn Bhd



Datuk Ir. (Dr.) Mohd Annas
bin Haji Mohd Nor
Advisor / Specialist
G&P Professionals Sdn Bhd



TOTAL REVENUE FROM 1999 - 2008



G&P total revenue is showing steady growth every year since 1999 to 2008.



G&P PROFESSIONALS SDN BHD



G&P GEOTECHNICS SDN BHD



G&P STRUCTURES SDN BHD



G&P INFRA SDN BHD



G&P MARITIME SDN BHD



G&P MECHANICAL & ELECTRICAL SDN BHD



G&P CLAIMS & CONTRACTS SDN BHD



G&P PROJECT MANAGEMENT SDN BHD



G&P ENVIRONMENTAL SDN BHD



G&P WATER SDN BHD



G&P R INTERNATIONAL (CAMBODIA) CO., LTD



G&P HIGHWAYS & TRANSPORTATION SDN BHD



G&P PROFESSIONALS SDN BHD



NORWEGIAN GEOTECHNICAL INSTITUTE (NGI)

NGI is a world renowned private foundation for geotechnical research and advisory services in Oslo, Norway specialising in the design of large dams, tunnels, offshore structures, instrumentation and other geotechnical problems.

Signing Ceremony between G&P & NGI



Left: G&P - Ir. Dr. Gue See Sew
Right: NGI - Dr. Suzanne Lacasse



CASELLA INTERNATIONAL

Casella International provides wide range of environmental technology services and expertise to deliver solutions that cover the entire life cycle of Conceive & Design, Develop & Operate and Restore & Sustain.



ZERO ENERGY DESIGN LTD

Zero Energy Design Ltd provide consultancy services in building physics, dynamic thermal simulation, computational fluid dynamics, building regulations assessments, zero and low carbon technologies and sustainable design practices.

NAZA TOWER AT PLATINUM PARK



Platinum Park

Located at Jalan Stonor, Kuala Lumpur, Platinum Park consists of one 38-storey office tower and 9-storey retail and carpark podium with 3 levels of basement carpark.



Ir. Heng Tang Hai:
Prestressed concrete beam and slab system is used to achieve a shallow floor structure and the desirable long span column-free space. The cost savings is very significant as any height reduction translates directly into savings in all vertical structural, architectural and building services elements, as well as a reduction in building volume with a consequent reduction in cooling loads.



Solaris 2 Dutamas, Mont' Kiara, Kuala Lumpur

Consisting of 12 blocks of 6 to 10-storey shop office/office suite, 6 blocks of 24-storey service apartment, 2 open commercial elements, and 7-levels of basement carpark.



Ir. Ng Tak Kee:
Band beam and slab system uses wide shallow beams and reduces the overall floor depth while permitting longer spans and shorter time of excavation works for the 7 levels of basement floor. The relatively wide and shallow cross section also simplifies both the framework and services which can pass under the beams and shortened the floor to floor construction time.



Ir. Heng Tang Hai:
Flat slab and shear wall system is economical in the total construction cost because of shallower structural depth which reduces the storey height. In addition, with aluminium system formwork, the floor to floor construction cycle time can be achieved within 5 days.

Kiara Designer Suites, Mont' Kiara, Kuala Lumpur

Consisting of one block of 29-storey service apartment, one block of 6-storey carpark with recreation facilities and commercial space, and 2-storey of service apartment on top of the carpark.



Saville Residence, Kuala Lumpur

Consisting of one block of 30-storey Service Apartment, including 3-storey shop office and 7-storey carpark podium.

BANDAR BOTANIC, KLANG



Bandar Botanic, Klang, Selangor

The development consists of terrace houses, semi-detached houses, villas, apartments, shop offices and associated amenities buildings. The introduction of piled strip raft foundation has resolved common problems of platform settlement, differential settlement and cracks on structures which are commonly encountered for soft ground development.



*Ir. Cheah Siew Wai:
An ACEM award winning innovative and cost effective foundation system powered by G&P in-house state of the art soil-structure interaction piled raft analysis technique.*



BERJAYA TIMES SQUARE, BASEMENT EXCAVATION

PULAI PALM OIL MILL, INDONESIA



Pulai Palm Oil Mill, Riau, Sumatera, Indonesia

The palm oil mill is established to process palm oil fruits from the surrounding 80,000 hectares oil palm plantation with production rate of 120ton/hr. The total site area is 8.8 hectares and situated 50km away from river mouth of Sungai Guntung. The geological formation of the site revealed that the site is underlain with 46m thick very soft compressible swampy ground. The original foundation design revealed that the earthworks and foundation cost is 75% of the total C&S cost. With an

innovative floating system using piled raft foundation, the value engineering achieves a cost saving of about 30% of the total C&S cost.



*Ir. Liew Shaw Shong:
An ACEM award winning project utilising on-site materials and overcoming engineering challenges in the difficult ground for sustaining the proposed gigantic structures and processing plants.*



Berjaya Times Square, Jalan Imbi, Kuala Lumpur

Geotechnical consultancy for the project which includes planning, interpretation, analyses and design of the six level basement (maximum depth of 28.5m) and foundation for the 15-storey podium block and two 46-storey towers.



*Ir. Tan Yean Chin:
A challenging deep basement excavation in congested urban area and innovative raft foundation based on compensation foundation concept for 15 storey podium.*

DAMANSARA FLOOD MITIGATION



Damansara Flood Mitigation

The project is a form of social service aimed at improving the quality of life and value of investment without aggravating the surrounding environment of the communities affected by the ravages of floods.



Lai Ed Na:
Dealing with flood mitigation projects requires a multi-disciplinary approach to address the issues of floods in a holistic manner. All disciplines are equal and none less important than the other.

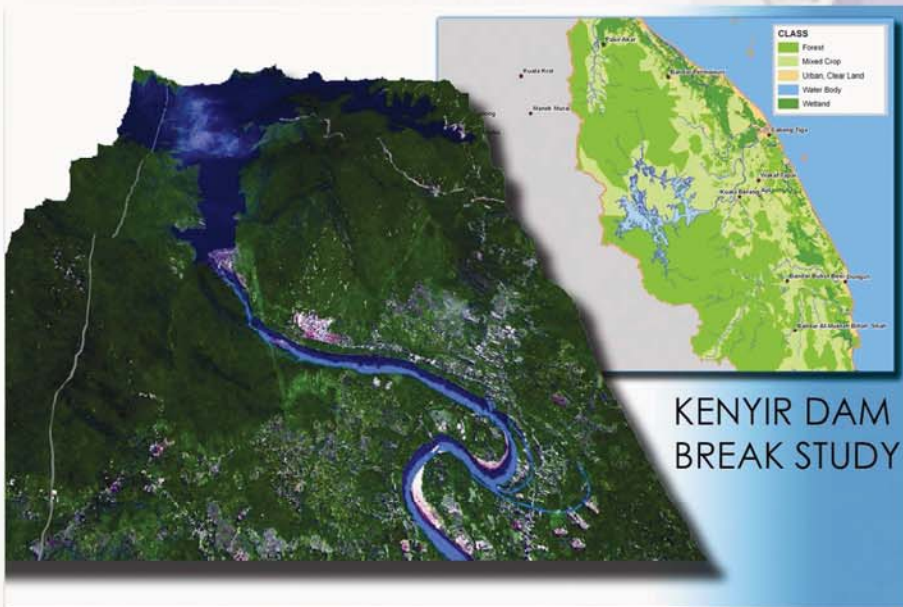


USJ Height

USJ Height is one of SIME Darby Property high end housing development in Selangor Darul Ehsan. We are proud to be part of this prestigious development.



Chong Kon Wah:
The high quality of Sime Darby Property is everybody's dream house. I was involved in structural design and site supervision for the sales gallery as well as Phase 4A & 4B of the development. As one of the Engineers involved, I will strive to do my best to achieve their goal of providing quality product in timely manner.



KENYIR DAM BREAK STUDY

Kenyir Dam Break Study

The study involved dam break modelling, flood routing, inundation mapping, and development of a Dam Safety Emergency Plan.



John Lim:
The spirit of exploration is far beyond my imagination to conduct this dam break study.



JADE HILLS, KAJANG

Jade Hills, Kajang

Jade Hills is a high end mixed development located between Cheras and Kajang which spans across 366 acres of prime land. It is a great development built on undulating terrain with a lush landscape and luxurious lifestyle.



Chan Yin Har:
From planning, detailed design, approval, tender, construction and finally completion stage, I have gained invaluable experience which gives me the energy to strive for greater success.

Integrated Water Resources Study for the Northern Region

The study was engaged to thoroughly review the NWRS (EPU 2000) pertaining to water resources availability, water demands and water quality for the study areas based on the recent data and climate change.



Yong Siew Fang:
A sustainable water resources management requires integration between the water availability, demands, water quality and landuse which are captured in this study.



WATER RESOURCES ASSESSMENT



YEN SO PARK, HANOI, VIETNAM

Yen So Park, Hanoi, Vietnam

The development is one of Gamuda Land most important development in Vietnam. The project involves the redevelopment and transformation of an existing park into an international-class thematic park surrounded with integrated commercial and residential developments.



Loh Kok Hoh:
Typhoons and earthquakes are considered as the most destructive of natural disasters in Vietnam. Therefore, extraordinary preventive measures should be taken for construction of new houses in Vietnam to mitigate the effect due to these natural disasters.

THE AWARD OF MERIT (1998) FROM THE ASSOCIATION OF CONSULTING ENGINEERS MALAYSIA (ACEM)

Foundation System of the Bistari Condominium, in which Ir. Dr. Gue See Sew was the engineer responsible for the foundation design of the condominium.



Ir. Dr. Gue See Sew: "Innovative and value adding design is the key success of the project."

THE AWARD OF COMMENDATION (2002) FROM THE ASSOCIATION OF CONSULTING ENGINEERS MALAYSIA (ACEM)



Foundation System of the first Pulau Palm Oil Mill, Riau, Indonesia where the whole structure is supported by piled raft (floating pile system).

Ir. Liew Shaw Shong: "Every glorious success is a cumulation of little lesson learnt from successful innovation or failure"



THE SILVER AWARD OF MERIT (2006) FROM THE ASSOCIATION OF CONSULTING ENGINEERS MALAYSIA (ACEM)

Piled Strip Raft Foundation System of the Bandar Botanic Development, Klang



Ir. Tan Yean Chin: "The introduction of innovative 'floating' piled-strip-raft system by G&P helps to resolve long pending common problem of hollow gap between the building & platform and cracks of building on filled ground overlaying soft compressible ground."

AWARDS



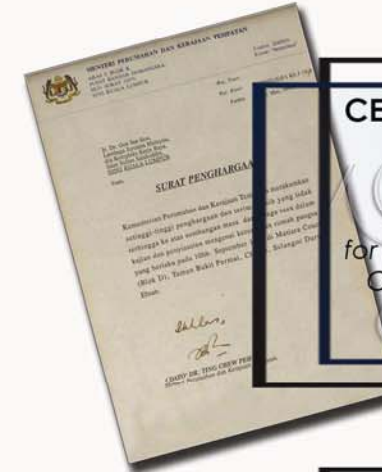
CERTIFICATE OF APPRECIATION FROM AMPANG JAYA CITY COUNCIL TO IR. DR. GUE SEE SEW

for assisting the local authority in preventing and mitigating natural disasters



CERTIFICATE OF APPRECIATION FROM PETALING DISTRICT COUNCIL TO IR. DR. GUE SEE SEW

for serving in the committee that investigated the collapse of private college building in Bandar Utama, Damansara, Selangor Darul Ehsan



CERTIFICATE OF APPRECIATION FROM THE MINISTRY OF HOUSING AND LOCAL GOVERNMENT TO IR. DR. GUE SEE SEW

for helping the ministry to investigate the collapse of the Mutiara Court (Block D) highrise building at Taman Bukit Permai, Cheras, Selangor Darul Ehsan



THE IR TAN SRI HAJI YUSOFF PRIZE, IEM TECHNICAL PAPER AWARD WON BY IR. LIEW SHAW SHONG

Technical paper titled "Bending Moment Interpretation of Structural Element with Measured Deflection Profile" published in the 1st Malaysia Geotechnical Conference (2004)



THE RAJA TAN SRI ZAINAL PRIZE, IEM TECHNICAL PAPER AWARD WON BY IR. TAN YEAN CHIN

Technical paper titled "Deformation of Anchored Diaphragm Wall for Deep Basement at Berjaya Star City, Kuala Lumpur" published in the 3rd Asian Young Geotechnical Engineers Conference, Singapore (1997)

CERTIFICATES



Penang Times Square



Paramount Office Tower, PJ



Basement Excavation for Prince Court Medical Centre



Sungai Selangor Dam Review, Kuala Kubu Bahru



Putrajaya Dam Monitoring



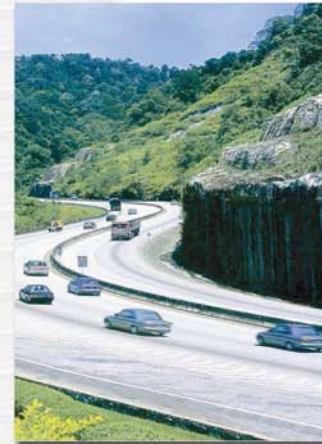
Cut & Cover LRT Tunnel, Putra Jaya



Investigation into Highland Tower Collapse



Investigation into Bukit Antarabangsa Failure



Rehabilitation of Slopes along North-South Expressway



M & E Consultancy for warehouse, office, car park, & service building



M & E Consultancy for 4 storey office & warehouse, Taman Perindustrian UEP



Highway Interchange in Klang

G&P Professionals is a multi-discipline engineering consultancy group that is able to provide engineering services in the areas of:

- Civil
- Claims & Contracts
- Electrical
- Environmental
- Flood Mitigation
- Geotechnical
- Geo-Environmental
- Highway
- Infrastructure
- Marine Engineering
- Mechanical
- Structural
- Transportation
- Water Resources

Our extensive local and international experience encompasses Commercial & Residential Developments, High Rise Developments, Hill-Site Developments, Land Reclamations, Soft Ground Engineering, Deep Basement Excavations and Major Infrastructure Works.

We are able to provide combined engineering services to our clients in all of the following stages:

- Conceptual Design
- Feasibility Study
- Preliminary Design and Analysis
- Detailed Design and Analysis
- Design Review
- Project Management
- Construction Administration and Supervision

In all of G&P Professionals' undertakings, we aim to provide high quality and value-added engineering services coupled with technical excellence, constructability and safety to satisfy our clients' needs.





Platinum Park, KLCC

Highrise building structures cannot be defined in terms of height or number of floors. Tallness itself is a relative matter and is subject to a person's perception.

However, from a structural engineer's point of view, a highrise building may be defined as a structure where lateral forces play an important role in its structural design due to its height.

The governing lateral force for highrise design in Malaysia is normally the wind load, though recently earthquake has also been taken into design consideration.



Suasana Bangsar, Bangsar



Saville Residence, Old Klang Road

Highrise buildings have fascinated mankind from the beginning of civilization. Significant advances have since occurred from time to time and so is the evolution in structural systems for both residential and commercial buildings.

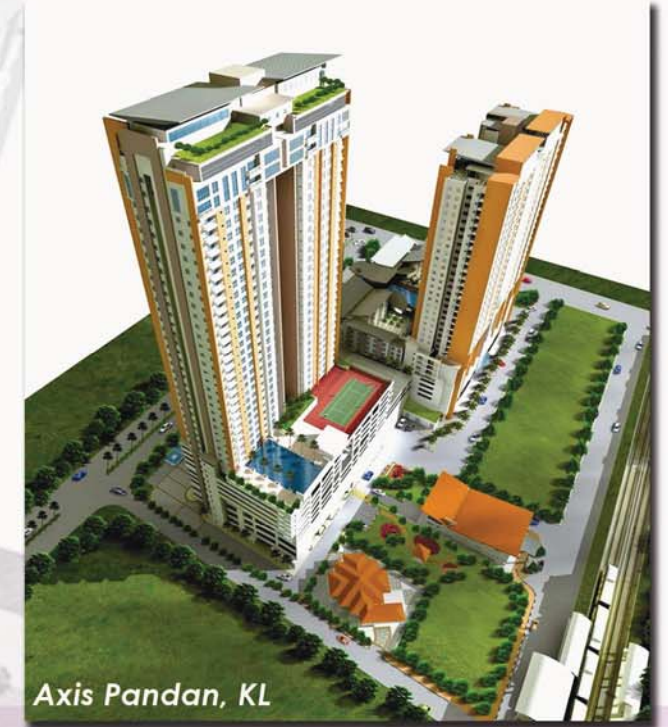
In modern office buildings, the need for flexibility in planning of floor space arrangements led to provision of large column-free open areas.



Ritze II, Damansara Perdana



Kiara Designer Suite, Mon't Kiara



Axis Pandan, KL

A residential building, however, requires provision of self-contained individual dwelling units separated by shear wall, cross wall or infilled-frame.

Other structural systems such as braced frames, framed-tube and hull-core structures have also been developed to accommodate various modern architectural features.

The latest "postmodern" buildings, with their even more varied and irregular external architectural treatment, has led to hybrid double and even triple combinations of the structural systems.



Mixed development, as its name implies, is a mix of structures with different functions such as commercial and residential towers, retail podium, basement car parks, etc. It involves various components ranging from piling, deep excavations and slope stabilization in geotechnical works; road, drainage and underground services in infrastructure works; concrete, steel and composite structural elements in superstructure works. It requires well organized conceptual study, specialized technical knowledge and experience to ensure the success of the project.



*Solaris Dutamas,
Mon't Kiara*



*The Residence,
Mon't Kiara*

Bungalows are associated with luxurious lifestyle. Hence, the design of bungalows has various architectural treatments, both interior and exterior to reflect their elegance. Naturally, these architectural treatments pose tremendous challenge to structural design with the usage of long cantilevers as well as slender and irregular structural elements.

Hypermarkets and Distribution Centers are known for their vast space and therefore have always presented the structural engineer with the challenges of long-span column-free floor layout and high ceiling.

On top of that, the challenge is even greater for Distribution Centers as it also take into account the stringent requirement for floor flatness and surface finishes.



*Giant Distribution
Centre, Sepang*



*Idaman Residence,
KLCC*

Apart from Civil and Structural consultancy, other services provided include structural value engineering, alternative design and engineering review which would not only benefit the project but also the Client. This helps to ensure any project undertaken is not only cost effective, but also safe and easy to construct.

In turn, the Client would benefit from the various alternatives considered that will provide bigger saleable floor space, pleasant aesthetic interior layout and lower costs of structural, architectural and M&E building services.

Deep Foundation is adopted to support structures under the following conditions:

- Suitable founding levels (hard stratum) is deeper than 3m
- Inadequate bearing capacity for shallow foundation
- to reduce excessive settlement
- to support structures due to uplift forces



Driven Pile

Driven Pile
Install prefabricated RC or steel pile using drop hammer

Pros:- fast, affordable

Cons:- noisy, excessive vibration, pile breakage problem, limited pile size compared to bored pile

Typical Construction Duration

Bored Piles

Pile sizes (dia.)	Drilling in soil	Coring in rock (limestone)
900mm	7m/hr	0.8m/hr
1350mm	5m/hr	0.6m/hr
1500mm	4m/hr	0.5m/hr

Productivity for bored pile of 35m length socketted into limestone bedrock is approximately 1 pile/rig/day. Productivity in limestone is much slower compared to other formation such as Kenny Hill.

Jack-In Piles

Jack-In Piles	Geological Formation
4 piles/rig/day	30m pile in limestone formation
6-8 piles/rig/day	15m pile in Kenny Hill formation

Cost for piling and pilecap works for condominium development up to 43 storey using jack-in pile foundation of RM 5-8/ft² of GFA achieved by G&P in 2005/2006.

List of G&P's Accredited Contractors is available at www.gnpgeo.com.my



MicroPile

Micropile
Bored cast in place mini-pile (size ≤ 300mm)

Pros:- compact size, fast & able to penetrate intermittent obstacles

Cons:- higher cost especially when pile length is long



Caisson Pile

Caisson Pile
Hand-dug cast-in-place pile (size > 1000mm)

Pros:- can be constructed on small, non-flat platform (Hill-site)

Cons:- workers' health and safety hazards, higher cost



Concrete linings to support dug hole



Jack In Pile

Jack-In Pile
Install prefabricated RC or steel pile using jack-in machine

Pros:- less noise & vibration and environmental friendly

Cons:- requires large, flat and relatively stronger platform for installation, limited pile sizes compared to bored pile

Do you know?

Innovative design of piled strip raft in the Bandar Botanic project won the ACEM Award (by G&P)



Marine Driven Pile

Marine Driven Pile
Install prefabricated pile (usually spun pile and steel pile) using drop hammer. Barge is required if there is no suitable platform during pile installation near or off-shore.



Bored Pile

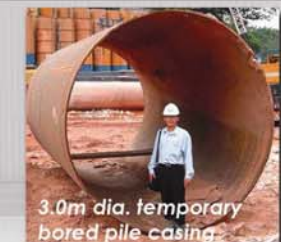
Bored Pile
Bored cast in place pile (size > 400mm)

Pros:- can core through intermittent obstacles (boulders), pile length can varied (low wastage), pile with diameter up to 3.0m can be constructed to support very heavy column loading.

Cons:- higher cost compared to driven and jack-in piles

Do you know?

One of the largest bored pile ever constructed in Malaysia is 3.0m in diameter for the foundation of Berjaya Central Park (by G&P)



3.0m dia. temporary bored pile casing

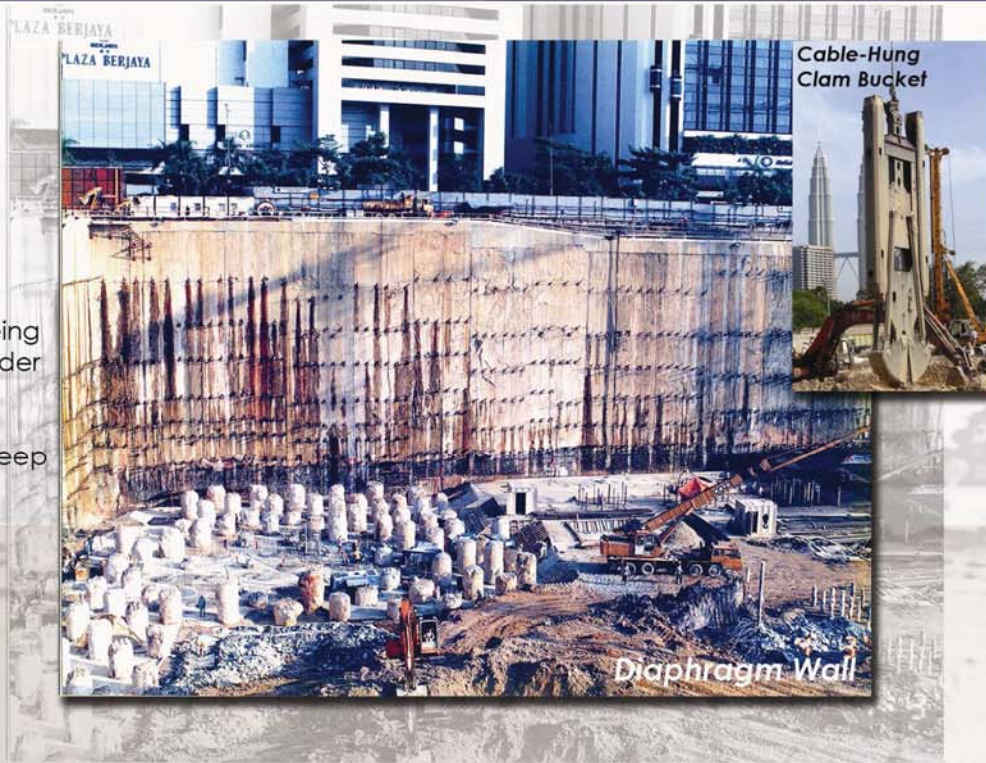
Retaining structures are required to support platform of different levels and basement.

Diaphragm Wall

Cast in-place wall with trench being excavated panel by panel under bentonite slurry

Pros:- relatively watertight, usually used as permanent wall in deep excavation

Cons:- higher cost compared to all other types of wall



Soldier Pile Wall

Consists of steel H-section piles (vertical component) and horizontal timber lagging between the H-section piles

Pros:- cost effective for temporary support in shallow excavation

Cons:- not watertight



Reinforced Soil Wall

Wall formed by prefabricated concrete panels with tensile reinforcement, i.e. metal strips or geotextile embedded into the retained soil

Pros:- cost effective for retained height > 6m especially when backfill is required to form higher platform

Cons:- cost ineffective for low wall



Soil Nailed Wall

Soil-Nailed Wall

Wall facing formed by reinforced shotcrete that supports the ground with grouted steel reinforcement (soil nail)

Pros:- able to retain very high (>20m) ground, minimal maintenance compared to ground anchors

Cons:- cost ineffective for low retained ground, restriction in length of soil nail especially near site boundary

Contiguous Bored-Pile (CBP) Wall
Formed by row of bored pile with gap of usually 75mm between the bored pile

Pros:- can core through intermittent obstacles (boulders), flexibility in adjusting rock socket levels of individual bored pile for erratic bedrock condition

Cons:- not fully watertight



Contiguous Bored Pile Wall

Reinforced Concrete Wall

Cantilever L-shape concrete wall with steel reinforcement

Pros:- very common and can usually be a part of the building internal wall

Cons:- cost ineffective for height exceeding 6m



Reinforced Concrete Wall

Do you know?

1970 – US filed the 1st patent for Soil Nail
2005 – One of Malaysia's highest soil nail walls for basement construction is 29.6m at Solaris Dutamas (by G&P)

General Recommendation for selection of wall type.

No.	Retaining Structure	Condition
a.)	Soil Nailed Wall	Cut ground especially retained height > 6m
b.)	Reinforced Concrete Wall	Retained height < 6m
c.)	Reinforced Soil Wall	Filled platform with retained height > 6m
d.)	Rubble Wall	Low retained height < 2m (due to concerns on workmanship)

* Proper selection of wall system depends on actual site condition, soil parameters, project specification, requirements, etc.

Deep excavation involve ground excavation more than 5m deep.

Retaining wall generally requires temporary support system for retained height exceeding 5m.

Horizontal Struts
(struts against rigid structures)
Movement of the wall being restricted by steel struts braced against stable / rigid structures.



Horizontal Struts



Raking Struts

Raking Struts
Excavation face being supported by raked steel member that struts against completed structures, i.e. pilecap, slab and corbel.



Horizontal Struts

Horizontal Struts
(struts between 2 opposite sides of wall)
Movement between 2 opposite sides of wall will counter-balance each other via the steel struts.



Ground Anchors

Ground Anchors
Retaining wall is supported by prestressed ground anchors

Usually are installed for temporary condition (installed beyond the site boundary) & shall be removed after the completion of building structures

Excavation work is faster by adopting this system (No space constraint).

Top-Down Construction
Construction of structural slabs (usually termed as ring slab) & earth excavation commences progressively from ground floor towards lower basement floor in "top-down" sequence.

Longer time for earth excavation due to space constraint.

Building structural works can be started once the ground floor slab is completed.

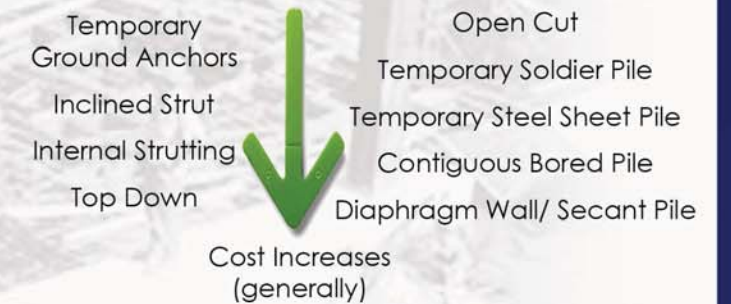


Top-Down Construction



Plunged-in Column

Excavation System



Slope strengthening involves stabilisation of slope using reinforcing elements or material with considerable mass

Rock Toe

Rock boulders of certain sizes are arranged to designated gradient on slope surface and at toe of slope.

Stability of slope will be enhanced by the self weight of the rock mass.



Rock Toe



Prefabricated Vertical Drain (PVD)

Ground Improvement involves improvement of bearing capacity or to control settlement of soft ground to ensure satisfactory long-term performance.

Prefabricated Vertical Drain (PVD)

Installation of geocomposite strip into soft soil layer to accelerate the rate of consolidation by shortening the water drainage path.



Soil Nailed Slope (Grid Beam System)

Soil Nailing

The basic concept of soil nailing is to reinforce and strengthen the existing ground by installing closely-spaced grouted steel bars into a slope or excavation as construction proceeds from the "top-down".

Slope stability is being stabilised by grouted steel reinforcement while minimal maintenance are required for soil nailed slope.

Stone Column

Stone column consists of bored hole that is filled with crushed coarse aggregates.

It is a ground improvement technique to improve ground bearing capacity.

The permeable aggregates in stone column also help to accelerate the rates of consolidation for soft soil.



Stone Column

Rock Bolts & Dowels

Jointed rock mass will be mapped to check for its potential failure mechanism.

High risk rock slope will be strengthened using grouted rock bolts or dowels.



Rock Bolts & Dowels

Geotextile



Geotextile

Geocomposite fabric is used to enhance ground bearing capacity. Geotextile also serve as a separator for different soil materials.



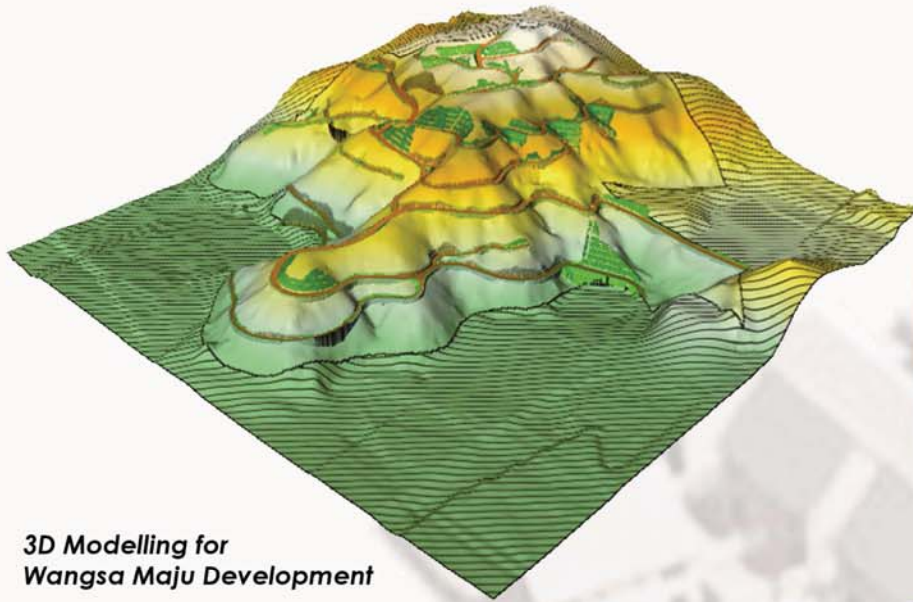
Surcharge

Surcharge

Additional load (usually earth) being added on top of the platform to accelerate the rates of consolidation.

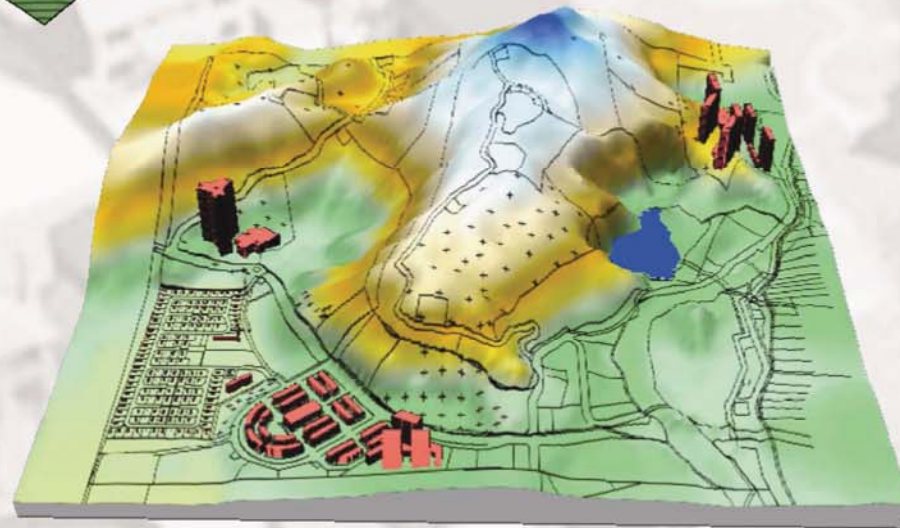
Normally, the cost of construction for infrastructure works ranges from RM 150,000/acre to RM 250,000/acre excluding the earthwork and ground improvement costs.

Earthworks cost depends on terrain, type of development platform requirements, depth of rock, source of fill materials, dumping site and also fuel cost.



Do you know?
For hill site development, proper selection of road networks together with planning of layout and platform levels can have potential savings up to RM100,000 per acre.

3D Modelling for Wangsa Maju Development



3D Modelling for Damansara Perdana Development

For hill-site development, the combined cost of earthworks, slopes improvement works and retaining structures ranges from RM 350,000/acres to RM 750,000/acres.

The cost goes up as the terrain is steeper (more land > 25° steep) and the size of land reduces. For optimum hill site development, the total land area for development should be more than 100 acres to enable effective planning.



Major Infrastructures

No.	Major Infrastructures	Cost
1	Suction Tank, Pump House & Reservoir	RM 20,000/acre - RM 30,000/acre
2	Sewerage Treatment Plant	RM 18,000/acre - RM 25,000/acre
3	Main Drain, Detention Pond & On Site Detention	RM 50,000/acre - RM 90,000/acre



Local Infrastructures

Local Infrastructure cost ranges from RM 150,000/acre - RM200,000/acre

No.	Local Infrastructures	Cost
1	Road	RM 20,000/acre - RM 30,000/acre
2	Drainage	RM 35,000/acre - RM 50,000/acre
3	Sewerage Reticulation	RM 12,000/acre - RM 16,000/acre
4	Water Supply	RM 13,000/acre - RM 18,000/acre

Stormwater quantity control facilities can be classified by function as either detention or retention facilities. The detention concept is most often employed in urban stormwater drainage systems to limit the peak outflow rate for a specific range of flood frequencies to match the peak discharge from the same catchment before development.

The primary function of detention facilities is to reduce peak discharge by temporary storage and gradual release of stormwater runoff by an outlet control structure. The reduced post-development runoff hydrograph is typically designed so that the 100 year ARI peak flow (Post Q_{100}) is equal to or less than the 2 year ARI pre-development peak flow rate (Pre Q_2).



For a newly proposed development area, an estimated area equivalent to 5% of total development area will be allocated for detention ponds. This estimation is based on ponds active water of about 3m depth excluding slope buffer surrounding the pond reserve. Pond reserve refers to water body for ponds active water, freeboard and 4m service lane around the pond for maintenance purposes.



Structural design for landed properties requires close coordination with the design architect so that an optimum and aesthetically acceptable design can be achieved. The cost of structural work for low rise residential unit can be worked out based on the proportional reinforcement weight against the concrete volume.



Single Storey Link House

Reinforcement weight: 2,800 - 3,500kg/unit
Concrete volume: 23m³/unit

Steel Poundage:
Column: 178-208 kg/m³
Beam: 170-190 kg/m³
Slab: 100-120 kg/m³
Stairs: 120-140 kg/m³



Double Storey Link House

Reinforcement weight: 4,500 - 6,000kg/unit
Concrete volume: 40m³/unit

Steel Poundage:
Column: 178-208 kg/m³
Beam: 170-190 kg/m³
Slab: 100-120 kg/m³
Stairs: 120-140 kg/m³



Semi-Detached and Bungalow

Reinforcement weight: 8,000 - 18,000kg/unit
Concrete Volume: 50 - 100m³/unit

Steel Poundage:
Column: 178-208 kg/m³
Beam: 170-190 kg/m³
Slab: 100-120 kg/m³
Stairs: 120-140 kg/m³

*Estimations are based on suspended ground slab and normal pitch roof construction.

*Quantity for superstructure only (exclude quantity for substructure, stiffener and hoods).

Revetment has a variety of meanings in architecture, engineering and art history. In stream restoration, river engineering or coastal defence, they are sloping structures placed on banks or cliffs in such a way as to absorb the energy of incoming water.

In military engineering they are structures, again sloped, formed to secure an area from artillery, bombing, or stored explosives. In architecture they are a variety of structures, normally vertical, used to retain a wall, or sometimes just to decorate it.



JPS has introduced Labuan Block as an alternative design for revetment. Typically, the whole process of design would take approximately 18 months from field measurement to construction drawings. Solutions for coastal protections could be in any form depending on site suitability.

Do You Know?

Malaysia has shoreline of approximately 4,800km and 30% of coastline belt is experiencing erosion



River or coastal revetments are usually built to preserve the existing uses of the shoreline and to protect the slope, as defence against erosion. A typical rock revetment of 2 m high and 10 m width would be approximately RM 1,800 per m run.



At some places, the shoreline is retreating at an alarming rate of 20 m/year.

Generally, ports, jetties and marinas are places with sufficient water depth for ships to moor and berth safely. These structures are important as they provide the interface between sea transportation and land transportation.



7 Islands berth are required to cater for Chemical Tanker mooring for approximately 1-2 days.

Details of vessels and environmental forces dictate the design and arrangement of berth and mooring structures.

A three hooks quick release mooring system, installed at a chemical jetty is approximately RM 6 Million.



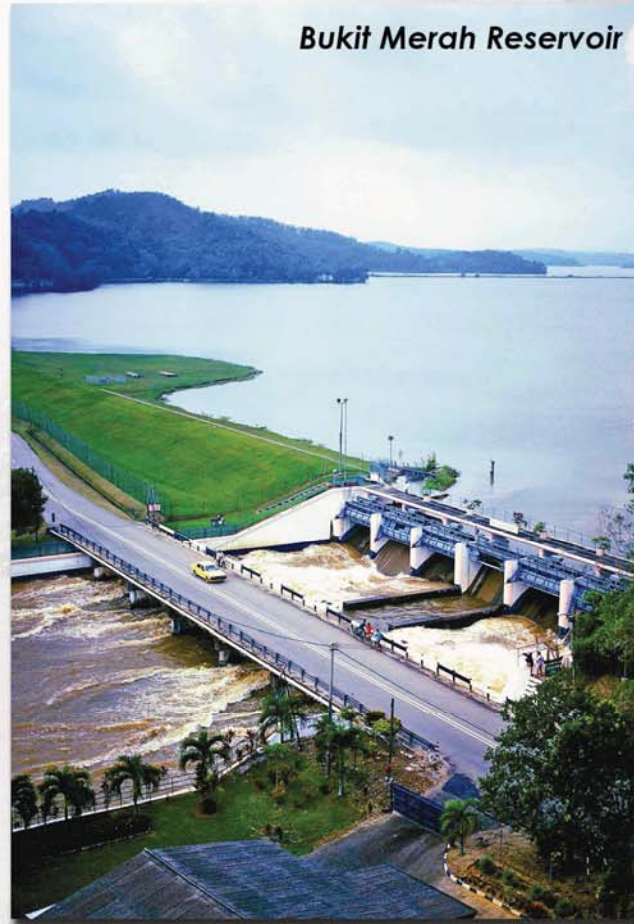
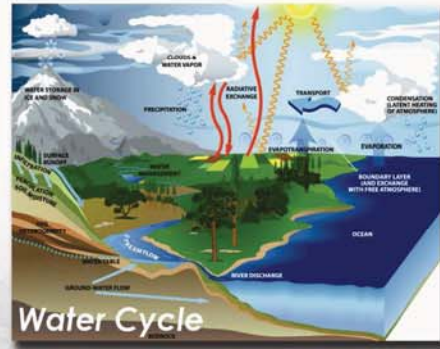
For jetty, there are "T", "I" and "L" shape arrangement for berth. It could also be floating, on pile or wharf arrangement.



Fendering system is important; wrongly selected fender type could jeopardize the whole operation. "CHEAP does not mean SAVING and BIG does not mean SAFE"

There are different purposes of having any of the above mentioned structures. For instance, the requirements for oil berth differ from a bulk terminal and the instrumentation for supporting mechanical and electrical items differ with the consignment.

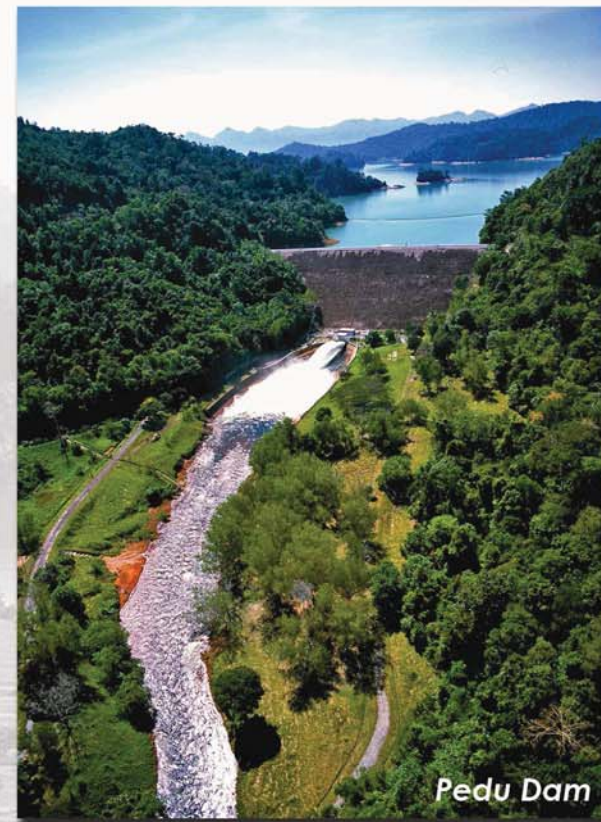
Hydrology is a study of the occurrence, processes and distribution of earth's water in both the atmosphere and hydrosphere. Hydrological processes include precipitation, infiltration, surface runoff, percolation, groundwater flow, evaporation and transpiration.



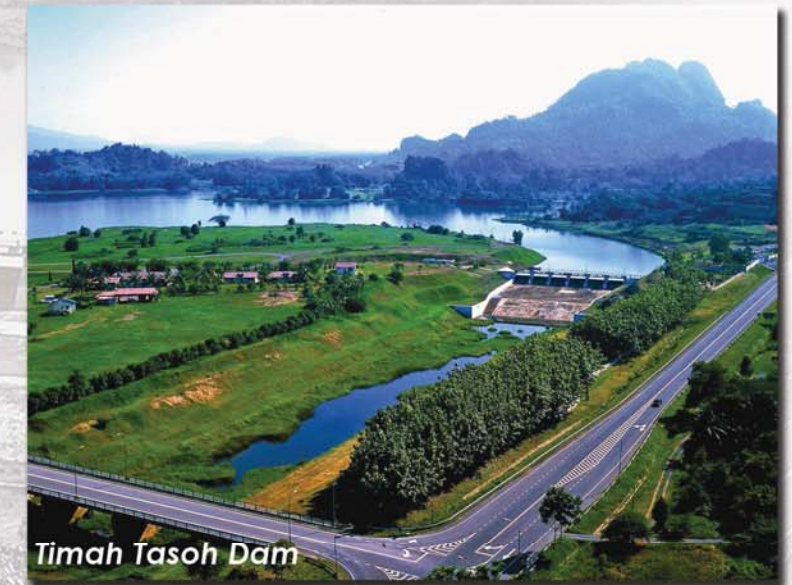
Bukit Merah Reservoir



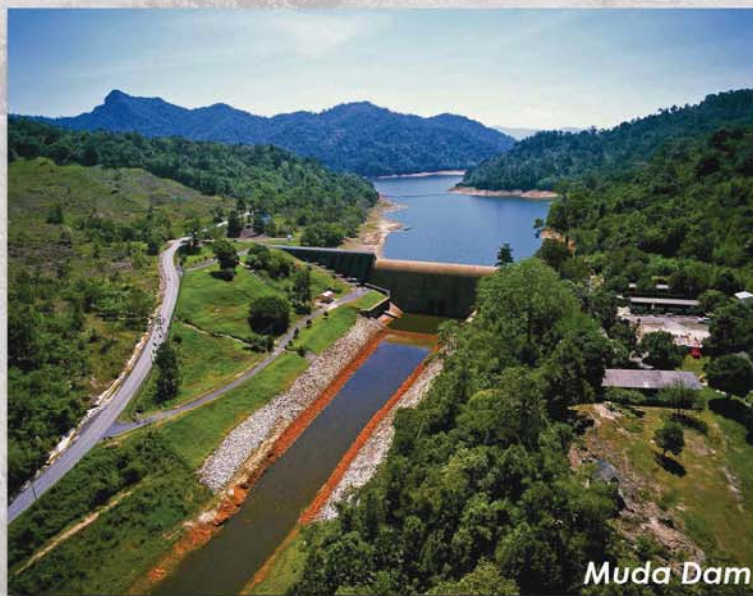
Muda Dam Reservoir



Pedu Dam



Timah Tasoh Dam



Muda Dam

Hydrological data are of great importance for the planning and design of water resources projects for irrigation, water supply, drainage, flood mitigation, pollution control, hydropower, navigation, etc.

With the advancement in computational modelling and GIS tool, complexities of the hydrological processes can be better simulated and swiftly analyzed with the use of catchment rainfall-runoff models.

Do you know?

The volume of average annual rainfall in Malaysia is 990 billion m³, surface runoff 566 billion m³, evaporation 360 billion m³; and groundwater recharge 64 billion m³.
Water exploitation in Malaysia – 97% is surface while 3% is groundwater.

Water resources systems can now be managed based on remote and real-time monitoring of hydrological parameters such as rainfall, water levels and flows at various critical locations in their systems.

Do you know?

The total length of Malaysia's water supply pipeline (about 100,000 km) is approximately 2.5 times the earth's equatorial circumference.



Water resources deal with the water availability in a catchment and water demand such as for irrigation and domestic purposes.

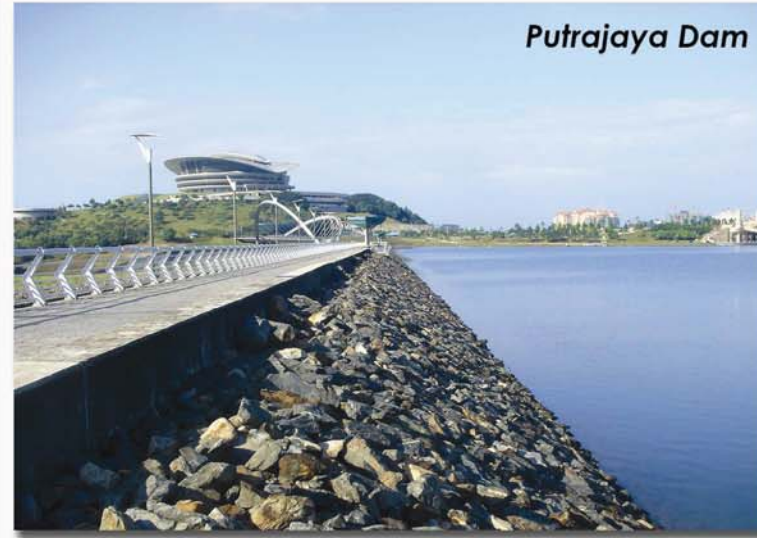
Model simulation of Water Resources Systems are increasingly being applied to analyse in detail the water requirements compared to the water availability and to prioritise the water resources projects for implementation.

Dam is constructed for one or more of the following purposes:

- Irrigation
- Hydropower
- Water supply
- Flood mitigation
- Aesthetic and recreational purposes

Ultimate responsibility of dam safety lies with the owner. Dam owner should carry out:

- Maintenance
- Monitoring
- Surveillance
- Safety review programme
- Dam break Study
- Emergency Action Plan etc.



Putrajaya Dam

Putrajaya Dam and Kenyir Dam are classified as large dam in accordance with the criteria established by International Committee of Large Dam (ICOLD) (1974).

Criteria	ICOLD	Putrajaya Dam	Kenyir Dam
Height (m)	> 15	18-30	155
Crest length (m)	> 500	750	800
Reservoir capacity (million m ³)	> 1	26.5	13600
Maximum flood discharge (m ³ /s)	> 2000	904	6500



Kenyir Reservoir

Kenyir Dam is currently the largest operational dam in Malaysia in terms of:

- Largest volume of embankment fill (17 million m³ ≈ 2.8 million truck loads)
- Largest man-made lake (369 km² surface area ≈ 1.25 times the area of Penang Island)
- Largest gross storage volume (13.6 billion m³ ≈ 5.4 million Olympic-size swimming pools)

Do you know?

Nurek Dam (Tadjikistan) is the tallest dam (300m) in the world which is double the height of Kenyir Dam (155m)



Aerial view of Subang Airport East Pond

Hydrodynamic modeling is a technique applied to simulate flow characteristics in a waterway or river as a result of inflows from surface runoff by routing these flows through the river system.

Hydrodynamic models provide a means for engineers to evaluate the flow behaviour through natural or man-made waterways. This has become an indispensable tool when it comes to understanding flood scenarios and when evaluating design options for flood mitigation projects.



Inlet Structure of Subang Airport East Pond

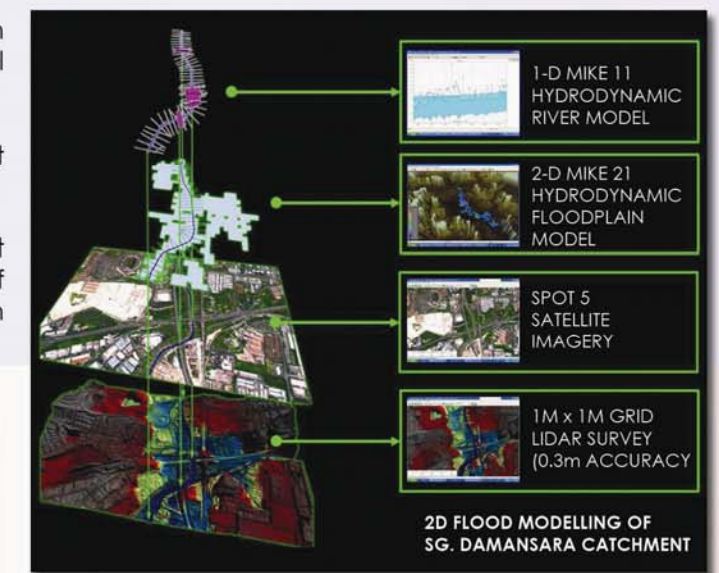
In the case of the Sg Damansara Flood Mitigation Project, 1-D, 2-D and also a scaled physical model were used as part of the hydraulic analysis.

The Sg Damansara catchment is the largest sub-catchment in the larger Sg Klang basin.

Under the Sg Damansara Flood Mitigation Project (Package 1), a total of 2.7 million cubic metres of storage volume was created for flood detention purpose.

Do you know?

Rajang River (760 km), the longest river in Malaysia is about 11% of the length of Nile River (6,650 km), the longest river in the World.



We help improve aesthetic appeal, inspiration and sense of well-being through integration of MECHANICAL & ELECTRICAL SERVICES.



ENERGY provides desirable lifestyle and business operation via sustainability and feasibility design.

AIR CONDITIONING delivers consistent comfortable conditions in building efficiently and effectively.

LIGHTING builds engaging environment and boosts occupants performance and productivity.

LIFT gives solutions to passenger and freight vertical transportation in comfortable and reliable course.

VENTILATION conveys fresh air into building and limits unwanted airborne pollutants.

EARTHING AND LIGHTNING PROTECTION lessens possibility of life, structure and equipment damage with enhanced protection



ELECTRICAL

FIRE PROTECTION ensures life safety, property protection and continuity of operation from fire hazard

PLUMBING carries drinking water to consumers and conveys sewerage waste away for water recycling

EXTRA LOW VOLTAGE completes voice and data communication and building automation in more sustainable design



MECHANICAL

We help improve and promote green building concepts to development as ways of returning favor to the earth.



- i. Design luminance to meet MS1525:2007
- ii. Upgrade to high frequency ballast and energy efficient lighting
- iii. Design ventilation to meet ASHRAE61.1:2007
- iv. Maintain relative humidity 50%-75% to prevent growth of mould and fungus
- v. CO₂ and CO monitoring system for indoor carpark
- vi. Promote environment friendly refrigerant R134A
- vii. Harvest rainwater to reduce potable water consumption
- viii. Design metering and Building Automation System to monitor energy usage and detect leakages and system failure
- ix. Separate meter for energy usage monitoring
- x. Use renewable solar energy in BiPV and solar panel to generate electricity and heat



INNOVATION

- i. Recover condensate water from AHU/FCU for use as make-up water
- ii. Recover heat from air-cooled split unit to generate hot water
- iii. Use non-chemical water treatment system
- iv. Incorporate UV and HEPA filtering system for office air supply
- v. Recycle water used for testing of Fire Protection System
- vi. Recover heat loss of exhaust air to environment using heat wheel
- vii. Promote greenery roof to reduce heat load accumulated from roof
- viii. Introduce day light via reflector, light tube, light box, etc.



Electrical Loading Design Estimation

Link-House	: 5 – 11 kW
Bungalow	: 11 – 15 kW
Apartment	: 5 – 11 kW
Shoplot	: 11 – 15 kW
Office	: 55 – 85 W/m ²
Hotel	: 2 – 4.5 kW/room

Water Storage Tank Design Estimation

Link-House	: 1500 – 1820 Litres
Bungalow	: 1820 – 2720 Litres
Apartment	: 1500 – 1820 Litres
Shoplot	: 2000 – 3000 Litres
Office	: 10 Litres/m ²
Hotel	: 1500 – 1820 Litres/room

Average Cooling Load Check Figures

Residence	: 35 – 65 Btu/hr/ft ²
Office	: 50 – 75 Btu/hr/ft ²
Restaurant	: 70 – 120 Btu/hr/ft ²

Cost Estimate for M&E System

Link-House	: RM 8 - RM25/ft ²
Bungalow	: RM12 - RM50/ft ²
Apartment	: RM 6 - RM30/ft ²
Condo	: RM10 - RM45/ft ²
3-Star Hotel	: RM100 - RM170/ft ²
5-Star Hotel	: RM120 - RM215/ft ²

OUR VISION FOR THE FUTURE

We are here to serve the community and engineer the future. We make a better tomorrow for the people and continue to add value in our services. Today, we are one of the finest one-stop engineering consulting firms. Tomorrow, we shall be well recognized in the region and globally.



OUR VISION

Research and development, a key to continual improvement and sustainability has always been strongly promoted and encouraged. Now, we have a well structured R&D organization formed by our staff who continue to seek improvement and opportunity to innovate and create.

In 2008, we had our R&D Achievement Award which is held once every two years. This is to show our appreciation and also encouragement to the staff for their innovation and contribution to the company.



2008 R&D Achievement Award

1st PRIZE
Automated Standard Templates for Plotting of Geotechnical Data
(Ir. Khoo Chee Min & Ir. Cheah Siew Wai)

2nd PRIZE
Ultimate Pile Lateral Capacity & Liquefaction Analysis using SPT
(Ir. Chow Chee Meng)

3rd PRIZE
Stone Column Design (Composite Strength Parameters)
(Wong Chen Jack)
&
Piled Embankment Design (Ir. Lee Peir Tien)

We have strong enthusiasm in learning, improvement and continually share our experience through publications. Many lessons learnt from mistakes, researches done throughout many projects, and innovative design successfully implemented are published to share our knowledge. To date, we have given 27 lectures, 8 Lead Speakers / Special Lectures, produced 6 Keynotes, 4 Articles and 116 Technical Papers. Since 1999, we have been publishing 8 papers a year on average. We are also regularly invited to conduct courses / seminars in Malaysia and overseas.



TECHNICAL PAPERS	
1981-1990	9 papers
1991-1995	4 papers
1996	4 papers
1997	8 papers
1998	8 papers
1999	8 papers
2000	11 papers
2001	6 papers
2002	3 papers
2003	7 papers
2004	13 papers
2005	6 papers
2006	8 papers
2007	9 papers
2008	8 papers

* Technical papers, specifications, checklists, etc. can be downloaded at www.gnpgroup.com.my

R & D

Sustainable Design and Construction

G&P is now moving towards sustainable design and construction ISO 14000 after obtaining the ISO 9001:2000 in 2001. In June 2009, G&P Professionals Sdn Bhd and Zero Energy Design, Ltd (UK), an integrated architecture and energy consulting firm, signed an MOU to establish a formal Joint-Venture company in Malaysia in the areas of Green Building Design, Assessment, Audit and Testing of Thermal Leakage forming ZED - G&P Sdn Bhd.



Green Building Index
ACEM (Malaysia)



Green Mark
(Singapore)



LEED
U.S. Green Building
Council (USA)



Growing with G&P
They were once young and ignorant.
TODAY, they are competent and confident.
They have no tolerance for mistake and always strive for the best.
They do not compromise with bad practice.
They are the professionals.

Engineers who have joined us are given opportunity to be one of the partners and are proven as follows:



G&P's Partners

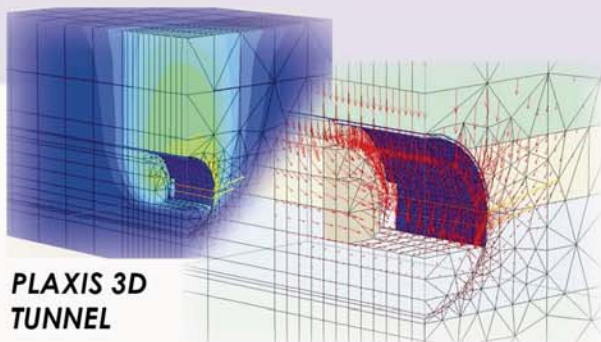
Standing-from left: Ir. Low Chee Leong, John Lim Chee Kiang, Ir. Darryl Fong Chew Chung, Ir. Lee Seong Tatt, Ir. Cheah Siew Wai, Ir. Lee Peir Tein
Sitting- from left : Ir. Dr. Wong Shiao Yun, Ir. Chow Chee Meng, Ir. Khoo Chee Min, Yong Siew Fang, Lai Ed Na

Collaboration with universities

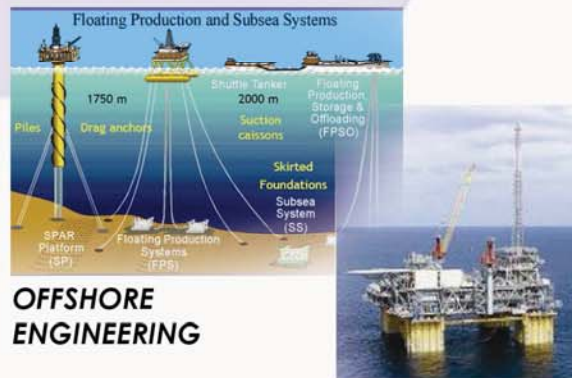
To promote and encourage research and development in engineering, G&P has initiated collaboration with a few Universities in Malaysia such as UNITEN (Universiti Tenaga Nasional) and UM (University of Malaya). Ir. Dr. Gue See Sew is also the Adjunct Professor at Curtin University of Technology, Sarawak from 2003 - 2008.



Forefront of Technology



PLAXIS 3D
TUNNEL



OFFSHORE
ENGINEERING

To pursue and maintain our leading edge, we always strive to keep abreast with the latest technology.

Nowadays, we see the need for quality and competent engineers. Therefore, training and proper guidance to the young Engineers is essential and important to their growth. We ensure our Engineers learn through good practices and right attitude.



Do you know?
G&P provides training and colloquium for staff every Tuesday and alternate Thursday.
You are INVITED!

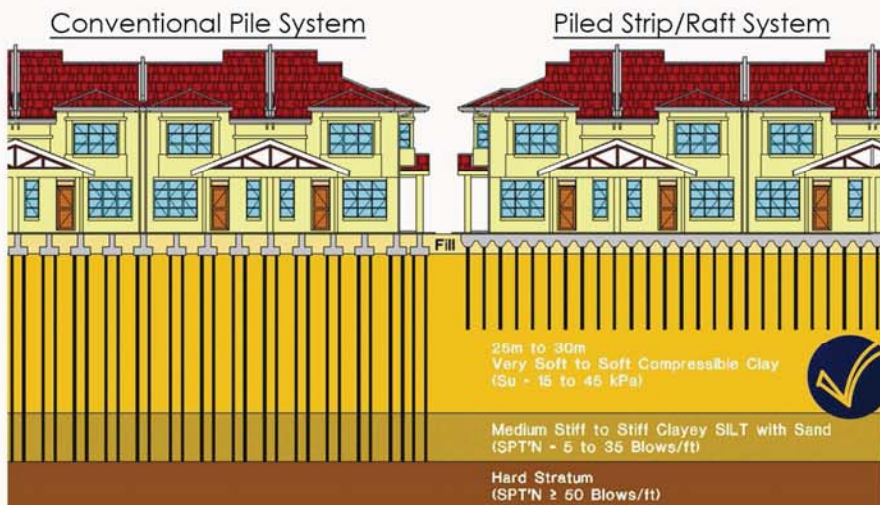
HISTORY OF VALUE ENGINEERING

1.) Foundation System of First Pulai Palm Oil Mill, Riau Indonesia



- Innovative floating system using piled raft foundation is adopted.

2.) Foundation System of Bandar Botanic, Bukit Tinggi, Klang



- Piled Strip Raft System is adopted for the foundation system.

3.) Foundation System of Bistari Condominium



- Alternative Design on the foundation system reduces the cost up to 50% (saving of RM 5 million)

- Alternative option adopted

THANK YOU FOR YOUR TRUST
WE HOPE TO SERVE YOU WITH BETTER SERVICES
AND VALUE ADDING FOR YEARS TO COME



Paint Ball at Bukit Jalil - July '07



Awana Kijal, Terengganu - Mar'07



Endau Rompin, - August'04



Kenyir Lake - May'04



Pulau Tioman - Mar'05



Awana Kijal, Terengganu - Mar'07



G&P Anniversary Dinner '00



G&P Anniversary Dinner '01



G&P Anniversary Dinner '02



G&P Anniversary Dinner '04



G&P Anniversary Dinner '05



Pulau Tioman - Mar'05



Damai Laut - July'02



Pulau Tioman - Mar'05



G&P Anniversary Dinner '06



G&P Anniversary Dinner '07



G&P Anniversary Dinner '08



Cameron Highlands - July'01



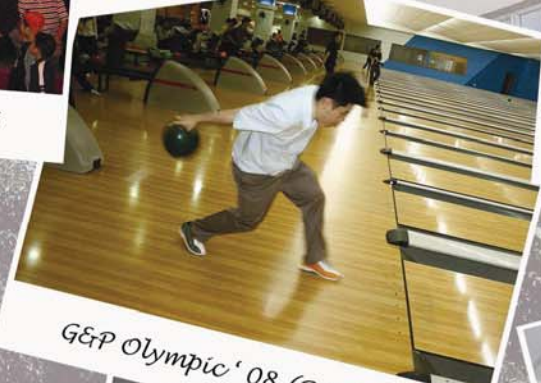
Botanical Garden, Putra Jaya - July'08



Kenyir Lake - May'04



English Course '08



G&P Olympic '08 (Bowling)



G&P Idol '08 (Champion)



G&P Idol '09 (Champion)



QUALITY SERVICES



OUR COMMITMENT



Wisma G&P
39-5, Jalan 3/146,
Bandar Tasik Selatan,
57000 Kuala Lumpur,
Malaysia

Tel : 60(3) - 9059 5396
Fax : 60(3) - 9059 5869
Website : www.gnpgroup.com.my
Email : gnp@gnpgroup.com.my

Credits

Editor : Ir. Chow Chee Meng
Main Design & Artworks : Lim Fang Liang
Committee Member : Bryan Lee Chee Boon
: Choong Kean Wui
: Wong Chen Jack
: Lee Jian Zhun
: Ben Mun Hao Yoong
: Chew Chin Yeang
: Tan Pin Yuan
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