



Company Profile

MMSB CONSULT SDN BHD

Table of Contents

1.0 MMSB Consult Sdn. Bhd.

2.0 Our Vision, Mission and Values

3.0 Organisation Structure

4.0 Organisation Chart

5.0 Project Profile

- *Rail*
- *Infrastructure, Highway & Bridge*
- *ICE / ICE for Lenders*
- *Buildings*
- *Marine*
- *Dam*

6.0 List of Completed & Current Projects

7.0 Registrations

- i) *Companies Commission of Malaysia (CCM)*
- ii) *Board of Engineers Malaysia (BEM)*
- iii) *Ministry of Finance (MOF)*
- iv) *Association of Consulting Engineers Malaysia (ACEM)*
- v) *Malaysian Fire and Rescue Department*
- vi) *SGS Malaysia Systems & Services Certification (ISO 9001:2015)*
- vii) *SGS United Kingdom Systems & Services Certification (ISO 9001:2015)*
- viii) *SGS Malaysia Systems & Services Certification (ISO 14001:2015)*
- ix) *SGS United Kingdom Systems & Services Certification (ISO 14001:2015)*

1.0 MMSB CONSULT SDN BHD

MMSB Consult is a multi-disciplinary firm of consulting engineers which commenced practice in the 1980's. Over the years, it has grown steadily in size and stature since its original inception.

We have become a leading consultant in all disciplines with extensive experience in engineering and management activities both in Malaysia and overseas.

The firm has participated in innovative delivery methods including Design & Build, Engineering Procurement Management and Alliancing.

We perform feasibility studies, project evaluation, design and design management, value engineering, project planning, scheduling and control resources planning, contract and financial, project management, construction management, project audits and operation and maintenance planning and management.

We have undertaken a wide range of projects providing engineering consulting services in **Civil, Structural, Electrical** and **Mechanical** services. The projects in the **Infrastructure Sector** include Highways, Roads, Bridges, Maritime, Rail, Airports, Land and Infrastructure Development, Township Development, Waste Water, Solid Waste and Water Supply. The **Buildings Sector** encompasses Commercial, Industrial, Institutional and residential buildings. This brochure presents a project profile on some of our projects.

Geographically, our projects are located in Malaysia, including Sabah and Sarawak and overseas in countries like India, Pakistan, Laos, Sri Lanka, etc. Our team therefore, has experience both in varying design codes and country conditions.

2.0 Our Vision, Mission and Values

Our Vision

"Inspiring changes that enhance the communities we live in through delivery of world-class professional services."

Our Mission

- *Ensure our clients excel at meeting their goals.*
- *Create and nurture an open working culture.*
- *Deliver shareholder value.*

Our Value Proposition

- *MMSB is the professional services provider that combines acquired knowledge, industry experience and innovation to achieve outstanding solutions.*
- *We are committed and dedicated to thinking beyond our immediate horizons and realising our full potential.*

Our Values

Helping and supporting each other

- Celebrating and trusting in our collective potential.

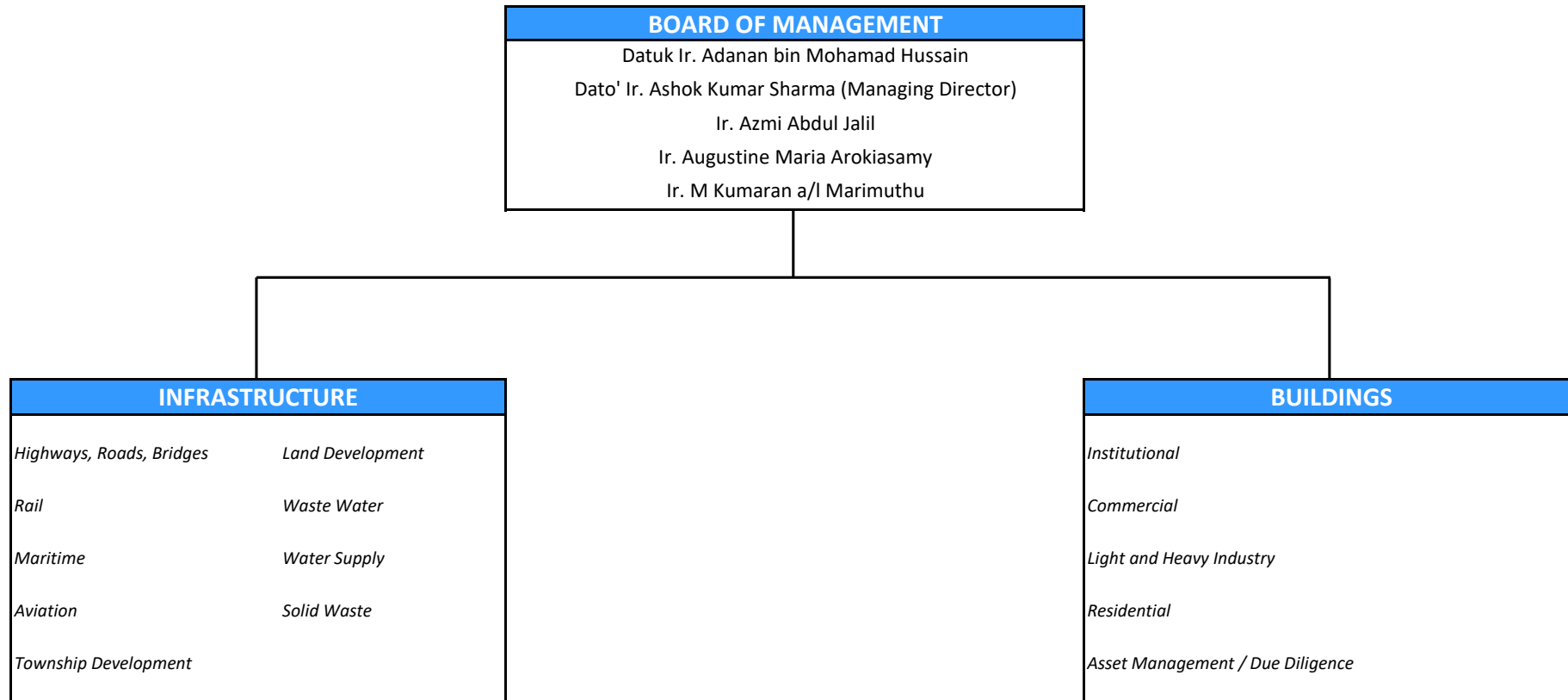
Always acting with integrity

- Doing the right things for our client's our colleagues and our selves.

Seeing things through our clients eyes

- Listening to and understanding their goals and aspirations.

3.0 Organization Structure



4.0 Organization Chart

MMSB CONSULT SDN BHD

ORGANIZATION CHART

MANAGEMENT

Datuk Ir. Adanan bin Mohamed Hussain / Dato' Ir. Ashok Kumar Sharma / Ir. Azmi Abdul Jalil / Ir. M Kumaran a/I Marimuthu

CHIEF OPERATING OFFICER

Ir. Augustine Maria Arokiasamy

DIRECTOR, BUSINESS DEVELOPMENT

Amar Raj Sharma

DEPUTY CHIEF OPERATING OFFICER

Karishma Sharma

HUMAN RESOURCES & ADMINISTRATION

Delvin Kaur

FINANCE

Asokan Krishna Iyer

STRUCTURE - BRIDGE

Sajal Nandy

STRUCTURE - BUILDING

Ir. Vasanthi P. Pachaiaappan

INFRASTRUCTURE

Ir. Mak Wing Hon

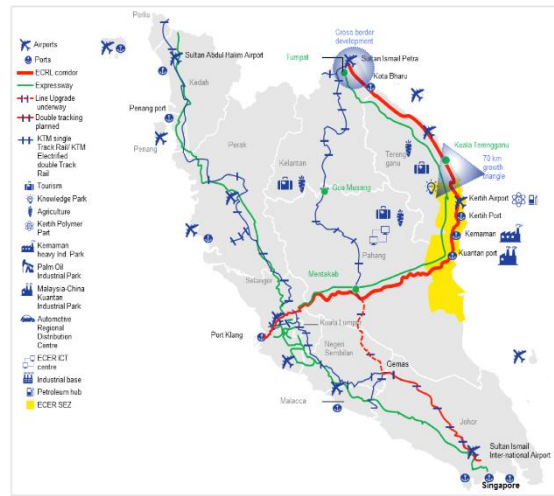
MECHANICAL & ELECTRICAL

Ir. M. Kumaran a/I Marimuthu

5.0 Project Profile

Rail

EAST COAST RAIL LINK (ECRL) PROJECT FROM WAKAF BHARU TO ITT GOMBAK



Client
Malaysia Rail Link Sdn Bhd

Location
Selangor
Pahang
Terengganu
Kelantan

Services
Independent Check Engineering for:
Architectural
Civil & Structural
Geotechnical
Mechanical & Electrical

Estimated Completion Date
2024

Project Value
Approx. RM 55 billion

MMSB Consult, in association with CRDC (China Railway Design Corporation), was appointed as the Independent Checking Engineers (ICE) for the East Coast Rail Link Project. The project aims to connect Kuala Lumpur and Port Klang to the East Coast through a strategic railway network.

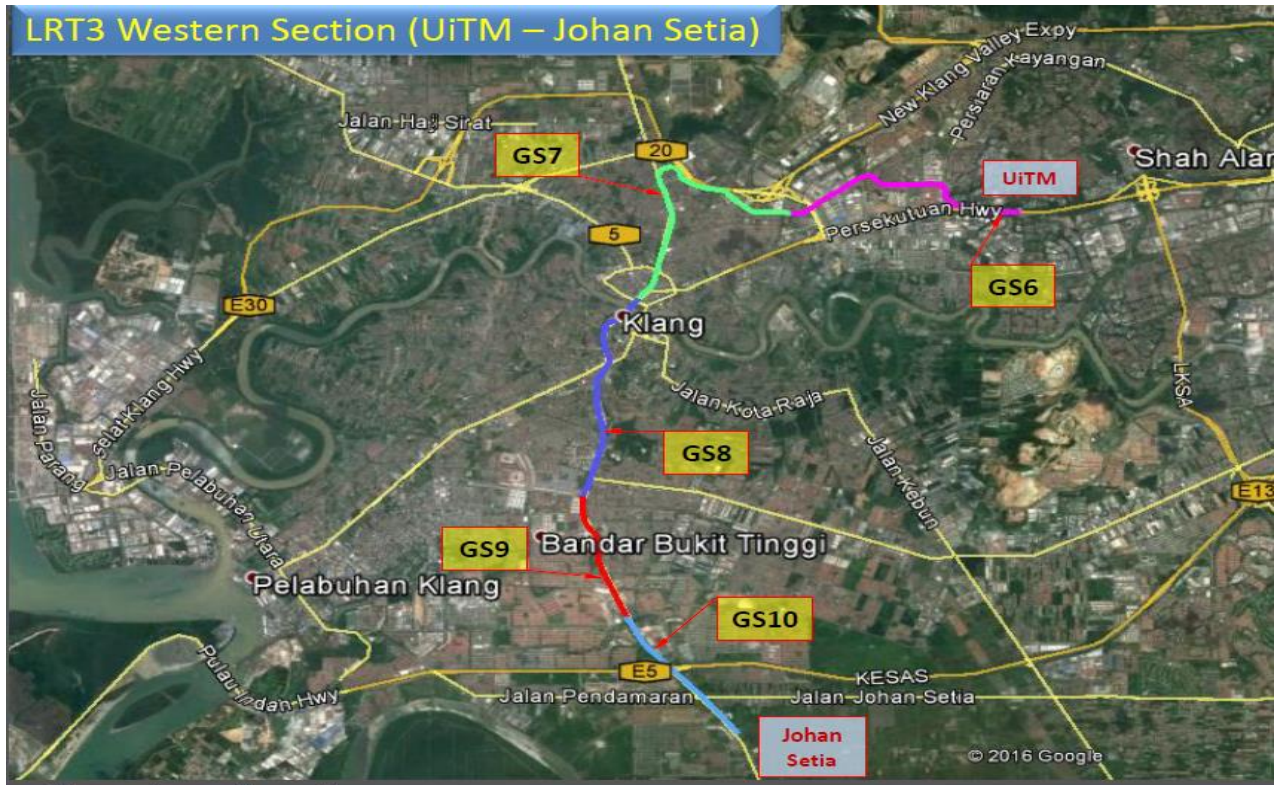
The Scope of Services undertaken by MMSB consists of the following:

- Approximately 600km of rail (both at-grade and elevated);
- 23 stations (Passenger and/or Freight);
- Bridges and Elevated Structures;
- Tunnels;
- 1 Train Depot; and
- All ancillary buildings.

The Scope of Works performed by MMSB for this project encompasses the independent review of the following:

- Alignment Design;
- Road, Drainage and Hydrology;
- Geotechnical Works;
- Guideway Structural Systems;
- Architectural, Civil, Structural, Mechanical and Electrical Works for Stations and Other Buildings;
- Utilities Relocation;
- Landscape Works; and
- Fire Engineering and Ventilation Works.

LIGHT RAIL TRANSIT (LRT 3) PROJECT FROM BANDAR UTAMA TO JOHAN SETIA



Client MRCBGK

MMSB Consult was appointed as the infrastructure detailed design Consultant for the **Western Corridor** of the LRT 3 project, consisting of 12 stations, 1 depot and 2 bus depots over a 18.4 kilometre stretch. This project involves the use of U-troughs in the design, which is a pioneer technology in Malaysia.

Location Kuala Lumpur

Services Civil & Structural Mechanical & Electrical

Completion Date 2020

Project Value Approx. RM 9 billion

MMSB Consult Civil & Structural works encompasses the following :

- Earthworks
- Road & Drainage
- Sewerage Reticulation
- Water Reticulation

MMSB's scope includes Planning, Design Management, Construction, and Testing and Commissioning:

Planning Stage

- Preparation of concept design
- Interfacing with systems
- Project Risk Management Plan
- Authorities- Schedule for submission and approval
- Incorporation of green technology in the station building design
- Constructability and Conceptual Traffic Management plans
- Advance works planning and design

Design & Tender Stage

- Guideway/Depot alignment
- Guideway structures
- Stations/Ancillary Buildings/ Multi- Level Car parks and bus depot
- Depot - Train
- At-grade – Roads and Drains
- Building Architecture including landscaping and town planning
- Prepare and manage Combined Service Drawings and SEM (Structural, Mechanical & Electrical) drawings
- BIM Implementation post tender to LOD300/350
- Clash analysis
- Preparing Bill of Quantities, tender drawings and Specifications, milestones and key dates
- Preparing detailed technical evaluation criteria

Construction

- Review and verify WPC's documentation
- Issuance of Construction Drawings
- Specifications
- Safety, Health and Environmental plans
- Project Quality Plans
- Risk Management Plans
- Site Supervision

CHENNAI METRO RAIL LINK PROJECT PHASE II, CORRIDOR 5, CHENNAI, INDIA



Client
Chennai Metro Rail Limited

Location
Chennai, India

Services
Structural

Completion Date
2024

MMSB Consult, part of a Joint Venture consisting of M/s MM S.p.A, Leadrail Infra Solutions Private Limited and MMSB Consult Sdn. Bhd. was appointed as the Detailed Design Consultant for the Chennai Metro Rail Link, Phase II, Corridor 5 in Chennai. MMSB's role in this Joint Venture is to carry out the detailed design for approximately 23 kilometre of elevated guideway structures and foundations.

MMSB's scope includes Planning, Design & Tender Management and Construction.

Planning Stage

- Preparation of concept design
- Interfacing with systems
- Constructability

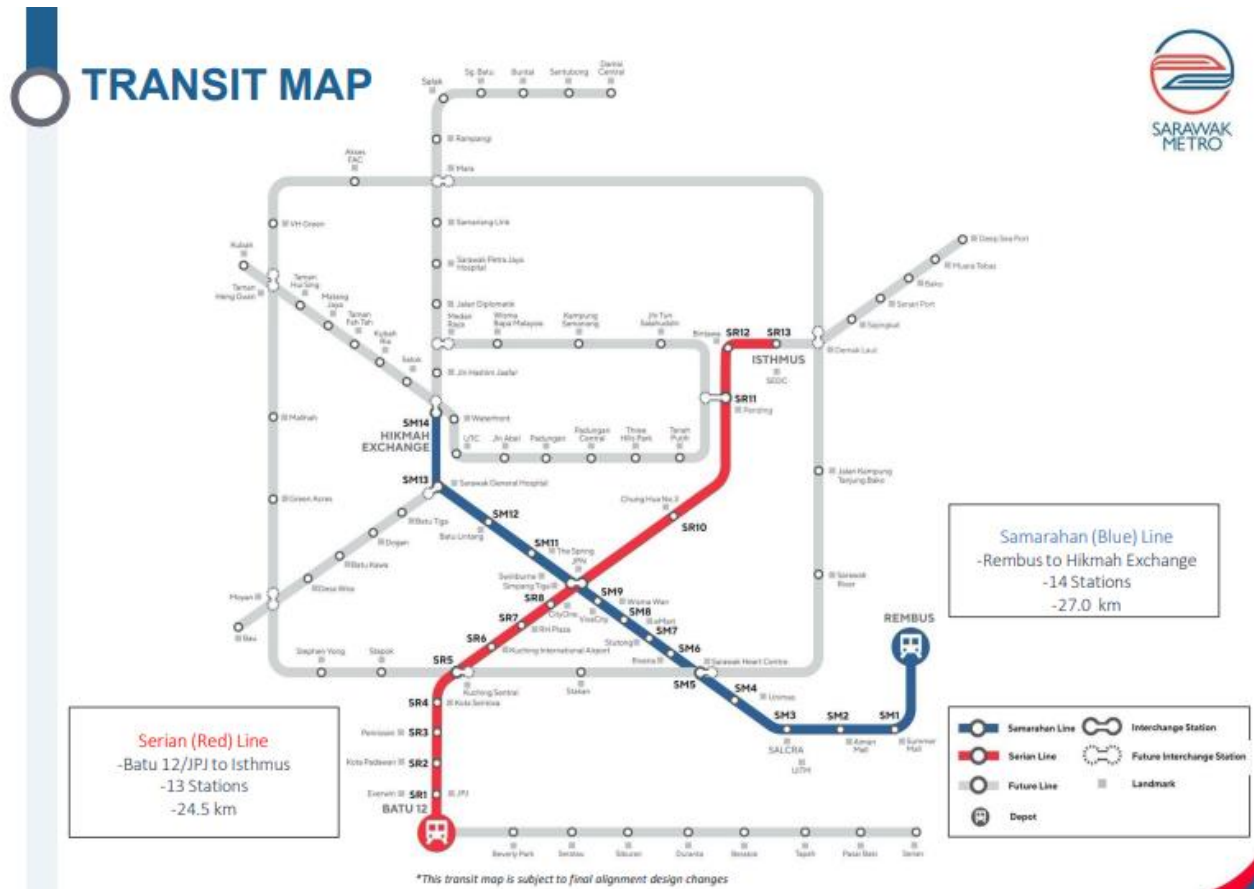
Design & Tender Stage

- Guideway structures
- BIM Implementation to LOD300
- Clash analysis
- Preparing Bill of Quantities, tender drawings and Specifications, milestones and key dates

Construction

- Review and respond Contractor's technical queries and submission
- Issuance of Construction Drawings

KUCHING URBAN TRANSPORTATION SYSTEM (KUTS) – SERIAN LINE 2



Client
Sarawak Metro Sdn. Bhd.

Location
Kuching, Sarawak

Services
Civil, Structural, Mechanical, Electrical,
Architectural, Quantity Surveying,
Geotechnical, Town Planning, Alignment,
Interface, Site Supervision

Completion Date
2026

MMSB Consult in a consortium with Jurutera Perunding TCS Sdn. Bhd. was appointed as the Detailed Design and Supervision Consultant for the Serian Line 2 of the Kuching Urban Transportation System (KUTS), for Sarawak Metro Sdn. Bhd., a Single Purpose Vehicle fully owned by the Sarawak Economic Development Corporation (SEDC). The alignment includes 24.5KM of at-grade and elevated sections with one depot and 13 stations.

MMSB's scope includes Planning, Design Management, Construction, and Testing and Commissioning.

Planning Stage

- Interfacing with systems
- Project Risk Management Plan
- Authorities- Schedule for submission and approval
- Constructability and Conceptual Traffic Management plans
- Advance works planning and design

Design & Tender Stage

- Guideway/Depot alignment
- Guideway structures
- Stations/Ancillary Buildings
- Rolling Stock Depot
- At-grade – Roads and Drains
- Building Architecture including landscaping and town planning

- Prepare and manage Combined Service Drawings and SEM (Structural, Mechanical & Electrical) drawings
- BIM Implementation to LOD350
- Preparing Bill of Quantities, tender drawings and Specifications, milestones and key dates
- Preparing detailed technical evaluation criteria

Construction

- Review and verify WPC's documentation
- Issuance of Construction Drawings
- Safety, Health and Environmental plans
- Project Quality Plans
- Risk Management Plans
- Site Supervision

LRT AMPANG LINE EXTENSION PACKAGE A



Client
BPHB – TIM SEKATA J.V.

Location
Kuala Lumpur

Services
Structural (Alternative Design)

Completion Date
2014

Project Value
Approx. RM 250 million

MMSB Consult was appointed to carry out the alternative design of guideway structures & station foundations of LRT Ampang Line Package A. Package A of LRT Ampang (AMG) Line Extension consists of approximately 7km of elevated double track / single track guideway structures with 4 nos. of station structures.

The proposed work involved the following:

- Alternative design of Twin Track Guideway structures consisting of simply supported segmental box girder of maximum span length 36m.
- Alternative design of Single Track Guideway structures consisting of simply supported segmental box girder of maximum span length 33m.
- Alternative design of 2 nos. special spans consisting of continuous varying depth precast segmental box girder to be constructed using balanced cantilever method.

The elevated structures are resting on large diameter cast in-situ bored piles.

MMSB's scope includes:

- Fast track detailed engineering design (alternative design).
- Issuance of drawings for construction.
- Head office technical support during construction.
- Construction Engineering of 2 special spans
- Various detailed design works carried out by MMSB includes:
- Structural design of superstructure and substructure.
- Review of geotechnical and structural design of foundations for guideway structures and stations before submission.
- Review of alternative design of retaining walls and cut / fill slope.

LRT AMPANG LINE EXTENSION PACKAGE B



Client
MRCB

Location
Kuala Lumpur

Services
Structural (Alternative Design)

Completion Date
2015

Project Value
Approx. RM 350 million

MMSB Consult was appointed to carry out the alternative design of guideway structures & station foundations of LRT Ampang Line Package B consisting of approximately 10.3km elevated double track / single track guideway structures with 8 nos. of station structures.

The scope of work involves the following:

- Alternative design of Twin Track Guideway structures consisting of simply supported segmental box girder of maximum span length 36m.
- Alternative design of Single Track Guideway structures consisting of simply supported segmental box girder of maximum span length 33m.
- Alternative design of Pocket Track.
- Alternative design of 8 nos. special spans consisting of continuous varying depth precast segmental box girder to be constructed using balanced cantilever method.

The elevated structures are resting on large diameter cast in-situ bored piles.

MMSB's scope includes:

- Fast track detailed engineering design (alternative design).
- Issuance of drawings for construction.
- Head office technical support during construction.
- Construction Engineering of 8 special spans
- Various detailed design works carried out by MMSB includes:
- Structural design of superstructure and substructure.
- Review of structural design of foundations for guideway structures and stations before submission.



MASS RAPID TRANSIT (SUNGAI BULOH – KAJANG) - PACKAGE V3 (DATARAN SUNWAY STATION TO SECTION 17)

Client
Acre Works Sdn Bhd

Location
Selangor, Malaysia

Services
Structural (Construction Engineering)

Completion Date
2015

MMSB Consult was appointed to provide construction engineering support to Acre Works for the Package V3 from Dataran Sunway Station to Section 17.

The proposed work involves the checking of standard spans against erection stages and loads, calculation of pre-camber and special span construction engineering.

MMSB's scope includes:

- Design of temporary prestress required in superstructure for erection stage,
- Checking of viaduct structure with standard spans against erection loads
- Calculation of pre-camber
- Construction engineering for 1 no. of special span



MASS RAPID TRANSIT (SUNGAI BULOH – KAJANG) - PACKAGE V8 (TAMAN MESRA TO KAJANG STATION)

Client
Acre Works Sdn Bhd

Location
Selangor, Malaysia

Services
Structural (Construction Engineering)

Completion Date
2015

MMSB Consult was appointed to provide construction engineering support to Acre Works for the Package V8 from Taman Mesra to Kajang Station.

The proposed work involves the checking of standard spans as well as special spans against erection stages and loads and calculation of pre-camber.

MMSB's scope includes:

- Design of temporary prestress required in superstructure of standard span for erection stage,
- Checking of viaduct structure with standard spans against erection loads
- Calculation of pre-camber
- Span lowering sequence
- Construction Engineering for 3 nos. of special spans

ELECTRIFIED DOUBLE TRACK PROJECT BETWEEN SEREMBAN AND JOHOR BAHRU



Client
DRB-Hicom Berhad

Location
Kluang – Kulai Section, Johor

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2008

Project Value
RM 200 Million

The government of Malaysia had approved the implementation of the Electrified Double Track Project to upgrade the railway infrastructure including Signalling and Communications between Seremban and Johor Bahru. The intention was to increase the speed to 160kph, frequency, capacity and efficiency of the train services whilst enhancing operational safety of both passenger and freight trains.

MMSB Consult was appointed by DRB-Hicom as the Civil and Structural Design Consultant Engineers for the tendering stage of the proposed project.

MMSB Consult had successfully assisted DRB-Hicom in tendering the infrastructural package from Kluang to Kulai stretch.

MMSB's scope Included:

Civil Engineering

- Road Alignment
- Junction Design
- Earthworks, Drainage and Pavement
- Ground Improvement and Monitoring Works
- Retaining Walls
- Culverts (for Road Over Bridge only)
- Vehicular Box Culverts
- Road Marking and Signages
- Water supply (for station, halts and quarters only)
- Sewerage (for station, halts and quarters only)
- Public Utilities Diversion and Relocation (for ROB, RUB, Halts, stations, realigned section of roads and quarters)
- Fencing, Noise Barriers and Street Lighting

Bridge Structures

- Road Over Bridge
- Bridge Over River
- Road Under Bridge
- Motorcycle / Pedestrian Crossings
- Vehicular Box Culverts

Building and Associated Services

- Substructure
- Superstructure
- Electrical and Mechanical

Temporary works

- Mostly on bridge structure and building structures

Bills of Quantities

PUTRAJAYA MONORAIL LINE 1



Project has been deferred by the Government of Malaysia

Client
Mtrans Construction Sdn Bhd

Location
Putrajaya

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2005

Project Value
-

MMSB Consult was appointed as the Civil & Structural and Mechanical & Electrical Consultant to design and supervise the works, which were left out by the previous contractor for the existing 7 nos .of underground stations (no.7 to no.13) including rail tunnels between these stations. The above project is located in Putrajaya, Wilayah Persekutuan.

The project consisted of:

- Existing 7 Nos. of underground stations (No.7 to No.13) and approximately 2.5 km of rail tunnel.
- Additional structural columns, walls, beams, slabs and staircases as required at existing station 7 to 13
- Emergency structural walkway at existing rail tunnel from station to station. (only from station 7 to 13)
- Three Substations for traction power at existing stations.
- Pumping system for the existing underground stations and rail tunnels.(only from station7 to 13)

Structural Engineering

- Physical site inspection and study of the original civil related works and structure member's integrity at the affected areas for existing stations 7 to 13.
- To prepare preliminary and detailed design
- Drainage

Mechanical Engineering

- Air-conditioning & mechanical ventilation system
- Fire protection
- Cold water system
- Soil & waste water piping system
- Tunnel ventilation
- Tunnel sump pump system
- Pumping installation within building

Electrical Engineering

- Medium and low voltage electrical distribution system
- Telecommunication distribution system
- Lifts & Escalators

ELECTRIFIED DOUBLE TRACK PROJECT BETWEEN PADANG BESAR AND IPOH



Client
MMC / Gamuda JV

Location
Padang Besar – Ipoh

Services
Civil & Structural

Completion Date
2003

Project Value
-

The government of Malaysia had approved the implementation of the Electrified Double Track Project to upgrade the railway infrastructure including Signalling and Communications between Padang Besar and Ipoh. The intention was to increase the speed to 160kph, frequency, capacity and efficiency of the train services whilst enhancing operational safety of both passenger and freight trains.

MMSB Consult was appointed by MMC / Gamuda JV as the Civil and Structural Design Consultant Engineers for the preliminary design of the proposed project.

MMSB Consult had successfully assisted MMC / Gamuda JV in the preliminary design of the infrastructural package from Ipoh to Butterworth stretch.

MMSB's scope Includes:

Civil Engineering

- Road Alignment
- Junction Design
- Earthworks, Drainage and Pavement
- Ground Improvement and Monitoring Works
- Retaining Walls
- Culverts (for Road Over Bridge only)
- Vehicular Box Culverts
- Road Marking and Signages
- Public Utilities Diversion and Relocation (for ROB, RUB, Halts, stations, realigned section of roads and quarters)
- Fencing, Noise Barriers and Street Lighting

Bridge Structures

- Road Over Bridge
- Bridge Over River
- Road Under Bridge
- Motorcycle / Pedestrian Crossings
- Vehicular Box Culverts

Bills of Quantities

KL MONORAIL - SWITCH DECK STRUCTURES



Client
Mtrans Construction Sdn Bhd

MMSB Consult was appointed as the Structural consulting engineers for 7 nos. Switch Decks located near the Stations & Depot.

Location
Kuala Lumpur

The superstructures generally consisted of prestressed concrete post-tensioned beam erected by conventional erection method with cast-in-situ deck slab. Superstructures are integral and simply supported type structure.

Services
Civil & Structural

Completion Date
2002

The substructures generally consist of a single rectangular column with a long cantilever crosshead to support the beams and resting on large diameter (1200mm & 1000mm) cast-in-situ bored piles in groups.

Project Value
-

MMSB's scope of work includes structural design as well as supervision of.

- Detailed design
- Structural setting out details
- Deck drainage

ELECTRIFIED DOUBLE TRACK BETWEEN RAWANG AND IPOH - PROPOSED OVERHEAD CROSSING

Client
Ranhill Bersekutu Sdn Bhd

Location
Selangor - Perak

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2002

Project Value
-

MMSB Consult was assigned to review the available preliminary design and arrive at an optimum span arrangement by considering sub soil profile and to carry out detailed design in consultation with Project Management Consultants for nine bridges across the proposed Double Track Project. The nine bridge locations are: Kg. Kelawar, FRI Antara Gapi, Felda G Besout, FRI Sg. Jang, Ladang Sg. Klah, Felda Serigala; to Guru Nanak Estate; Kerling and Kg. Menyorok.

MMSB's scope included review of preliminary design for span arrangement and height of embankment for six approach road bridges, to carryout detailed design and issuance of construction drawings for the construction of three road bridges at:

- *Gurunanak*
- *Kerling*
- *Kg. Menyorok*

MMSB's scope includes:

- *Review of existing span arrangement*
- *Carryout detailed design*
- *Design of bridge foundation*
- *Preparation of construction drawings*

5.0 Project Profile

*Infrastructure,
Highway & Bridges*

LEBUHRAYA BORNEO UTARA



Client
Lebuhraya Borneo Utara

Location
Sarawak

Services
Design Management Team
Design Checking Engineers
Construction Management Services

Targeted Completion Date
Ongoing

Project Value
RM 16 Billion

The Pan Borneo Highway Sarawak Phase 1, is approximately 740 Km in length, commencing from Semantan in the West to Miri in the East, and is proposed to be implemented on the DBFOM model. The construction process comprises of upgrading of the existing road to a dual-lane carriageway of ATJ R5/U5 standard.

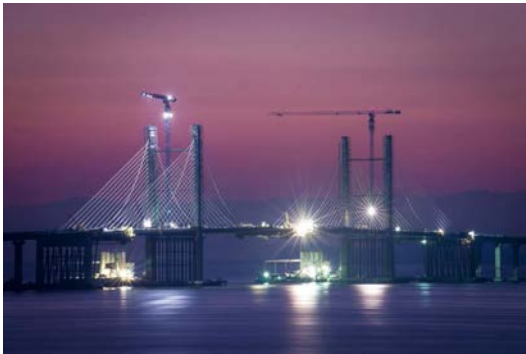
MMSB - MSZ JV was awarded for Design and Construction Management Services, in terms of implementing and delivering the project through effective controls over Cost , Quality , Safety and Constructability.

MMSB was also appointed to independently internal review the design and drawings prepared by the Design Consultants including review of 118 bridges which includes 3 numbers long span bridges

SCOPE OF SERVICES

- Internal Independent Review of the Design and drawings
- Review construction program provided by the contractor for necessary feasibility and admissibility.
- Review Construction Drawings/ Working drawings/ Shop Drawings (from Contractor) for applicability, after the same are vetted through by Supervision Consultants, and liaise with consultants/Engineers for any clarifications/modification/changes found necessary (from construction point of view).
- Advise contractor in advance on actions required to be taken for Expediting works without compromising on quality / safety and functional requirements, and in achieving different milestones for completion of projects as per the construction schedule.
- Monitor works to ensure progress in line with "Construction Durations" assigned to work activities. As the need arises, seek periodic updates of Master Program Schedule to mitigate delay.
- Advice Contractor on all effective ways of monitoring progress of works, and implementation of appropriate formats besides computer aided project management techniques.
- Review contractor's Project Quality Plan, for ensuring systemized work processes and flawless end result of works.
- Review Monthly Quality Test documents, to be compiled by contractor and vetted through by Supervision Consultants (SO), and forward the same to LBU for final approval and acceptance.

PENANG SECOND CROSSING



Client
China Harbour Engineering Company
Limited (CHEC)

Location
Penang

Services
Local Submitting Engineers for Structure,
Civil & Street Lighting, Construction
Supervision

Completion Date
2014

Project Value
Approx. 2.2 Billion

MMSB Consult was appointed as the submitting consulting engineer for the Marine portion of the structure as well as the Civil & Street Lighting for the main navigation spans of the proposed Penang Second Crossing by the China Harbour Engineering Company Limited.

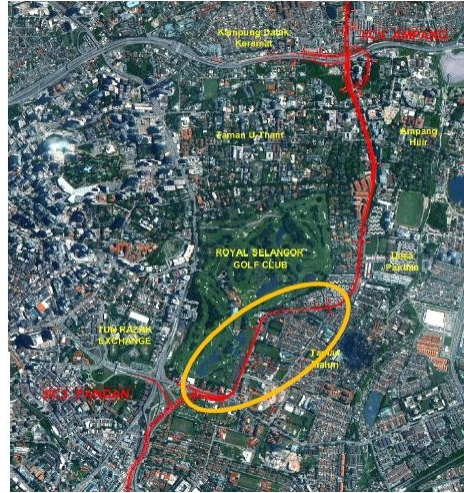
The proposed Penang Second Bridge Crossing will link to the existing Bayan Lepas Expressway at Batu Maung on the Penang Island and crossing the Straits of Malacca to Batu Kawan and subsequently to the North-South Expressway on the mainland. The total length of the proposed crossing is approximately 24km with the length of the marine portion (from shore to shore) approximately 16.5km. This portion of the work comprises of the following components: -

- *Main Marine Bridge comprising cable stayed main navigation spans of 117.5m + 240m + 117.5m arrangement*
- *Substructure and foundation of elevated approach marine bridge structure of 55m nominal span*

The scope includes the review and endorsement of structural design and drawings of marine bridge portion; the design of street lighting, navigation lighting, pavement, road furniture and road signage. Liaison with Approving Authority and Construction Supervision. Technical Support during Construction.

SETIAWANGSA – PANTAI EXPRESSWAY (SPE)

SECTION-3



Client
Lebuhraya DUKE Fasa 3 Sdn. Bhd.

Location
Kuala Lumpur

Services
Civil & Structural / Geotechnical

Completion Date
January 2020

Project Value
RM 2.4 Billion
RM 650 Million (Section 3)

MMSB Consult was appointed as the civil & structural consulting engineer for the proposed Setiawangsa – Pantai Expressway (SPE) – **Section 3** (Pandan to Setiawangsa) by Lebuhraya DUKE Fasa 3 Sdn. Bhd.

The proposed SPE is an elevated highway with double decker at certain sections and comprises of four (4) sections which starts from Kerinchi Interchange (at SPRINT) and ends at Taman Melati Interchange (at MRR2) covering a total length of 30 Km with 7 interchanges, 2 mainline toll plazas and 3 ramp toll plazas.

The Section-3 of Setiawangsa-Pantai Expressway commences at Jalan Kampung Pandan at Pandan Interchange (exclusive) and traverses northwards along Jalan Kampung Pandan, crosses Jalan Ampang & AKLEH interchange and ends near Setiawangsa along Jalan Jelatek covering a length of 5 Km. The construction works for SPE Section 3 includes the following:

- Elevated 2-lane dual carriageway along Jalan Kampung Pandan, Jalan Jelatek including double decker structure for about 2 Kms;
- Ampang Interchange; and
- Ramp Toll Plaza

MMSB's scope covers preliminary and detailed design including bills of quantities, construction supervision, technical support during construction and preparation of Building Information Modelling (BIM) using construction and as-built drawings of the following project elements:

- *Alignment for the mainline, interchanges & ramps; junction improvement, design of new pavement and earthworks.*
- *Foundation, geotechnical & ground improvement works.*
- *Drainage works (elevated & at-grade).*
- *Elevated Structures, retaining structures and widening of existing bridges.*
- *Road marking, signage, and road furniture.*

SUNGAI BESI – ULU KLANG ELEVATED EXPRESSWAY – PACKAGE CA1



Client
Acre Works Sdn Bhd

Location
Selangor

Services
Civil and Structural
-Alternative Design

Completion Date
2022

Project Value
RM 430 Million

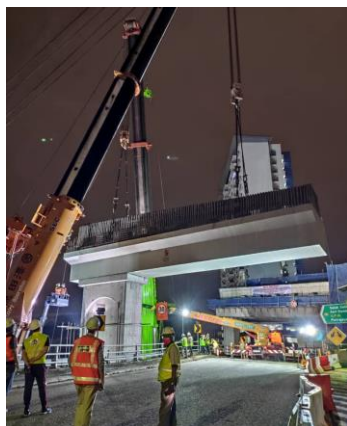
MMSB was engaged by Acre Works Sdn. Bhd. as the Alternative Design Consultant to provide detailed design and construction drawings for Long Spans over KTM, ERL, LRT and MRR2 Highway and below MRT line in String 3, String 4 and Long Spans over Sungai Besi Highway in String 5 (MS50).

MMSB's scope includes the:

- Alternative Design of elevated structure and
- Construction Engineering.

Salient Features:

- *Cast in-situ segmental box girder of span configuration 65.3m+133.1m+68.8m and width varying between 26.4m and 15.2m in String 3 over KTM, ERL, LRT and MRR2 Highway and below MRT line.*
- *Cast in-situ twin cell segmental box girder of span configuration 51m+110m+55.2m and width varying between 31m and 19.5m in String 4 over KTM, ERL, LRT and MRR2 Highway and below MRT line.*
- *Longest Eccentric Cantilever Precast Prestressed Pier Crosshead with total length of the crosshead 17.821m replacing Conforming design portal pier over MRR2 Highway. The length of cantilever measured from center line of column is 14.582m on longer side and 3.239m on shorter side. The length of cantilever crosshead from face of column on longer side is 12.582m and it is the longest eccentric cantilever crosshead at present in Malaysia.*
- *Precast segmental Box Girder modules in String 5 (MS50) crossing over Sungai Besi Highway*



DUTA-ULU KELANG EXPRESSWAY (DUKE) PHASE 2 – TUN RAZAK LINK



Client
Ekovest Construction Sdn. Bhd.

Location
Kuala Lumpur

Services
Civil & Structural / Geotechnical

Completion Date
Dec 2016

Project Value
RM 400 Million

MMSB Consult was appointed as the civil & structural consulting engineer for the proposed Duta-Ulu Kelang Expressway (DUKE) Phase 2 – Tun Razak Link by Ekovest Construction Sdn. Bhd.

The proposed DUKE Phase 2 is an elevated highway and comprises of two (2) links namely the Sri Damansara Link which traverses from the west to the east along Jalan Lang Emas, and the Tun Razak Link which traverses from the south to the north along Jalan Pahang.

The Tun Razak Link commences at Jalan Tun Razak near KL Hospital/IJN and traverses northwards along Jalan Pahang and Jalan 9/48A to connect to the existing Jalan Gombak after crossing existing DUKE at Sentul Pasar Interchange. Construction works for Duke 2 includes the following:

- Elevated 2-lane dual carriageway along Jalan Pahang, Jalan 9/48A
- On Ramps along Jalan Tun Razak;
- Off Ramp along Jalan 9/48A;
- Sentul Pasar Interchange 2;
- On Ramps at Taman Sri Setapak;
- Elevated U-Turn over DUKE near Jalan Sentul;
- Elevated U-Turn over DUKE near Bandar Dalam;
- Jalan Gombak Interchange; and
- On and Off Ramps at Jalan Gombak.

MMSB's scope covers preliminary and detailed design including bills of quantities, construction supervision and technical support during construction of the following project elements:

- *Alignment for the mainline, interchanges & ramps; junction improvement, design of new pavement and earthworks.*
- *Foundation, geotechnical & ground improvement works.*
- *Drainage works (elevated & at-grade).*
- *New bridges, retaining structures and widening of existing bridges.*
- *Road marking, signage, and road furniture.*

ISTANA RAMPS AT JALAN DUTA



Client
Ahmad Zaki Sdn Bhd

Location
Kuala Lumpur

Services
Structural Design

Completion Date
2011

Project Value
RM 106 Million

Ramps connecting the new Istana at Jalan Duta. The 3 tier interchange consists of 4 directional ramps connecting the new Istana to Jalan Duta, one of the busiest roads in Kuala Lumpur. The superstructure consists of 2.5m deep continuous precast segmental PSC single cell box girder to be constructed using balance cantilever construction method. The foundation consisted of groups of large diameter bored piles and is connected by rigid pile cap at the top.

MMSB Consult is engaged as the Engineering Consultant to provide the detailed design, preparation of construction drawings, bill of quantities and specification for bridge structures.

Salient Features:

- 3 tier interchange.
- 4 directional ramps on one of the busiest road Jalan Duta in Kuala Lumpur.
- 2.5m deep continuous precast segmental PSC single cell box girder for all 4 ramps.
- Balance cantilever construction method for box girders.
- Large diameter bored piles for foundation.

SUBANG KELANA LINK



Client
Ahmad Zaki Resources Bhd

Location
Subang Jaya

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2009

Project Value
RM 315 Million

MMSB Consult was appointed as the Civil & Structural Consulting Engineer for the design and build contract for the construction and upgrading of the road connecting Jalan Kewajipan in Subang Jaya, Jalan Subang (FT15) and Federal Route 2 (FT2). The total length of the road is approximately 4.5 km.

The project involves upgrading of the existing roads / highway, improvement of existing junction; construction of elevated structure from Jalan Kewajipan to Jalan Subang (FT15) crossing FT2 and construction of overpass crossing Jalan Kewajipan roundabout and New Pantai Expressway in congested urban development environment.

The elevated structure consists of precast & cast in-situ segmental box girder for mainline & bridge over Federal Highway and cast in-situ continuous box girders of spans varying between 40m and 58m for 6 numbers of ramps. The mainline superstructure is approximately 1.5km in length with a 20.6m width structure consists of approximately 47m span precast segmental PSC 9/5 span continuous twin cell box girder of depth 2.2m. The wet match cast segmental box girders are stressed using a combination of internal and external tendons and erected by balance cantilever method using gantry. The bridge over Federal Highway consists of twin 5 span continuous single cell box girders of length 55m+95+130+90+55m. The box girder is monolithic at the two centre piers and is supported on bearings at the other pier locations. The cast in situ segmental box girder at the two central piers will be constructed using traveller form and is depth 7.2m at support and 2.6m at mid span. The superstructures are supported on single leg or portal columns. The foundations consist of large diameter bored piles which are connected by rigid pile cap at top.

MMSB's scope includes:

- Preliminary design concepts, preparation of bill of quantities & specification for negotiation with the government.
- Segmental box girder bridge using balance cantilever method.
- Varying depth cast-in-situ box girder bridge of main span 130m to be constructed using traveller form.
- Associated geotechnical works, soil treatment & foundation work.
- Highway alignment design.
- Pedestrian bridge design.
- Structural setting out details.
- Upgrading of existing roads and junctions.

-
- *Drainage culverts and road side of drains.*
 - *Street lighting and relocation of utility services.*
 - *Sign gantry & duck drainage design.*
 - *Construction supervision and technical support during construction.*
 - *Preparation of detailed design report on Pavement Structural Overlay.*
 - *Preparation of pavement strengthening scheme layout and cross section drawings including tapering details.*
 - *Preparation of standard drawings for road markings, road furniture like guard rail etc, drainage and sub surface drainage works.*

DUTA ULU KELANG EXPRESSWAY (DUKE)



Client
Ekovest Construction Sdn Bhd

Location
Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2009

Project Value
RM 166 Million

The Duta Ulu Kelang Expressway (DUKE) is an 18km expressway and will function as a new east – west access along the northern corridor of Kuala Lumpur.

The expressway comprises two (2) links mainly the Mainline and the Karak Link. The mainline is 12.4km in length commencing at the New Klang Valley Expressway (NKVE) and SPRINT interfaces at the west side of Kuala Lumpur and traverses eastwards to the Middle Ring Road II (MRR II) at Jalan Ulu Klang. The Karak Link is 5.6 km in length commencing at Sentul Pasar Interchange traversing northwards to the existing KL – Karak Highway. The expressway is divided into three (3) sections namely, Section 1, Section 2 and Section 3.

Section 1 commences at Jalan Duta Interchange (NKVE) to Jalan Kuching Interchange, then terminates at Sentul Pasar Interchange.

Section 2 commences at Sentul Pasar Interchange to Setiawangsa Interchange, then terminates at Hill View Interchange (MRR II)

Section 3 commences at Sentul Pasar Interchange to Bandar Dalam Interchange, then terminates at Greenwood Interchange (KL-Karak Highway)

MMSB Consult has been appointed to carry out the detailed design and supervision for Section 2 which consist of the following:

- 6-lane dual divided carriageway of mainline (approx 6km)
- Jalan Air Jernih, Jalan Semarak and Jalan 37/56 Ramps
- Setiawangsa and Hillview Interchanges

MMSB's scope includes:

- Detailed engineering design of civil & structural work for mainline and interchanges.
- Detailed design for new / upgrading access roads or cross roads.
- Design of street lighting / high mast lighting, utility relocation.
- Tender documents, drawings, specifications, BOQ.
- Assist in obtaining various clearances from Govt. Agencies.
- Construction supervision during implementation stage.

FLYOVERS ALONG JALAN DUTA / JALAN KUCHING / JALAN SEGAMPUT



Client
Ahmad Zaki Sdn Bhd

Location
Kuala Lumpur

Services
Structural
Electrical & Mechanical

Completion Date
2007

Project Value
RM 158 Million

MMSB Consult in association with Perunding ZKR was commissioned to carry out Civil & Structural, Electrical & Mechanical consulting engineering services for the proposed Upgrading of Roads and Interchanges along Jalan Duta / Jalan Kuching / Jalan Segambut.

The project consists of the following interchanges:

- *Interchange 1: Dedicated ramp from Jalan Duta north to Jalan Duta south at the 'T' junction between Jalan Duta and Jalan Taman Duta (near Indian High Commission).*
- *Interchange 2: Dedicated ramp from Jalan Duta south to Jalan Duta/ Jalan Kuching interchange at Jalan Duta / Kompleks Kerajaan Duta intersection.*
- *Interchange 3: Flyover from Jalan Duta to Jalan Segambut Interchange on both directions at Segambut Roundabout at Jalan Duta/ Jalan Kuching / Jalan Segambut.*
- *Interchange 4: Flyover from Jalan Segambut Interchange on both directions across Jalan Duta / Jalan Segambut 'T' junction.*
- *Interchange 5: Dedicated ramp from Jalan Kuching north to Jalan Duta at Segambut Roundabout.*

The bridge superstructure of Interchange 2 consists of precast pretensioned U-beams and in-situ deck slab for Interchange 2. The elevated structure of Interchanges 3 & 4 consists of precast pretensioned U-beam and slab structure of span varies between 27m & 30m and 9 span continuous precast segmental PSC single cell box girder structure of spans 40m+7x57m+40m and of depth 2.7m. Interchange 5 consists of 5 spans continuous 3m deep precast segmental trapezoidal single cell box girder of span 45m+3x60m+45m over Jalan Kuching with approx. 30m span precast pretensioned U-beam and slab structure at both the ends. The width of the Interchanges 3 & 4 is 18.9m whereas the width of Interchange 5 is 9.4m.

The segmental superstructure consists of wet match cast joints, multiple shear

UPGRADING OF FEDERAL ROUTE 76, LENGGONG – SAUK (PACKAGE 2)



Client
Sigma Consortium

Location
Lenggong, Perak

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2005

Project Value
RM 235 Million

This route between Kuala Kangsar to Gerik, in the State of Perak forms an important link between East-West Highway and North-South Expressway. The improvement of this road transportation infrastructure, totalling 100km was divided into 3 packages. Package 1 and 3 have already been completed and opened to traffic.

MMSB Consult was appointed as a joint engineering consultant for Civil, Structural, and Electrical Services for the Design and Upgrading of Federal Route 76 for Package 2 by a "Design & Build" contractor. Package 2, which traverses from Lenggong to Sauk involved, among others, the design and construction of a 750m long bridge over lake, Tasek Chenderoh. The structural option of this bridge consists of Twin Box Single-Cell Variable Depth Box Girder for the main span and Constant Depth Box Girder for the Approach Spans.

The proposed scope involves widening and upgrading of existing road, JKR R3 to JKR R5 Standard including:

- *Improvement and re-alignment along Federal Route 76*
- *Design of bridges to JKR R5 Standard*
- *Design of intersection, junction improvement*
- *Drainage culverts, roadside drains*
- *Pavement design*
- *Road furniture*
- *Design of appropriate soil treatment and foundation works*
- *Street lighting and relocation of utility services*
- *Technical specification*
- *Bills of quantities*
- *Liaison with approving authorities*
- *Supervision of construction and technical support during construction*

JALAN SULTAN AZLAN SHAH VIADUCT AND ROAD IMPROVEMENT



Client
Seri Meraga Construction Sdn Bhd

Location
Penang

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2005

Project Value
RM 210 Million

MMSB Consult was appointed as the Civil & Structural, Electrical & Mechanical Consulting Engineer for a “Design and Build” contract for the Jalan Sultan Azlan Shah road improvement project which involved the construction of a viaduct along Federal Route 6 and the improving / upgrading of the at-grade Jalan Sultan Azlan Shah, located within congested urban environment. The proposed viaduct flies over the Bayan Baru roundabout and the Jalan Aziz Ibrahim / Jalan Sultan Azlan Shah intersection. The viaduct, elevated for approximately 2.4 kilometres, consists of a four lane divided carriageway of JKR U5 standard with an exit and entry ramp near the Bayan Baru roundabout. The alignment of the highway has forced the route along the median of the existing roads, optimising land usage.

The elevated portion used precast segmental single cell box girders with epoxy mortar joints, post-tensioned with bonded tendons. The approach abutment structures at both ends comprised of a RE wall. The viaduct box section has a 5.9m soffit width, 2.4m depth and 17.8m segment width whereas the ramp box section has a 6.2m segment width and 2.4m depth.

The five to six span continuous super-structure is to be erected by the balanced cantilever method using overhead erection gantry. The viaduct superstructure consists of 1082 segments for 52 spans @ 47m while the ramp superstructure consisted of 248 segments for 18 spans @ 47m. The substructures generally consist of a single square shaped column with rounded end elongated in cross-section at the top of the pier to accommodate the precast box. The structure is founded on large diameter cast-in-situ bored piles in group.

Setting out co-ordinates for the precast segments and pier locations are determined using computer modelling with the MOSS program.

MMSB's scope included structural design, street lighting, deck drainage system, at-grade roads and junctions design as well as highway alignments.

- *Post-tensioned segmental bridge design*
- *Highway alignment design*
- *Structural setting out details*
- *Street lighting, sign gantry & deck drainage*
- *At-grade roads and intersections design*
- *Construction supervision and technical support during construction*

NEW PANTAI HIGHWAY



Client
Road Builders (M) Sdn Bhd

Location
Subang Jaya - Pantai - Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2004

Project Value
RM 580 Million

MMSB Consult in association with Perunding ZKR was appointed as Civil & Structural, Electrical & Mechanical consultancy engineers for the privatised New Pantai Highway.

The proposed New Pantai Highway, approximately 21km length, commenced from Subang Jaya and terminates at Jalan Bangsar via Jalan Klang Lama. It connects with both the Kuala Lumpur - Seremban Expressway and the Federal Highway Route II.

The project involved the upgrading of existing roadways and consists of 7 grade separated interchanges. There are 16 nos. of bridge structures, 2 underpasses and 5 toll plazas. The bridges are of conventional beam and slab type utilising precast M-beams while the underpasses involved an open cut method of construction.

Extensive geotechnical and geological studies were carried out for this project with height of fill ranging from 15m to 30m due to space constraint. The design also involved filling of 2 major ponds with depth varying from -3m to 16m.

As the alignment runs through congested urban environment, significant utility services diversion was encountered. Similarly, efficient traffic management was required during construction.

MMSB's scope includes:

- Overall detailed design
- Diversion of existing utility and services
- Construction in congested urban development
- Tolling facilities
- Traffic management
- Geotechnical design – pond reclamation, slope stability
- Design of electrical services
- Roadside drainage, cross-culverts and hydrological studies
- Contract BQ and documentation
- Construction supervision and technical support during construction

AMPANG – KUALA LUMPUR ELEVATED HIGHWAY



Client
Percon - MMCE – Leighton

Location
Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2001

Project Value
RM 450 Million

MMSB Consult was appointed as the Civil Structural, Electrical and Mechanical Engineer for the Ampang Kuala Lumpur Elevated Highway which forms the new elevated toll road along an arterial route in Kuala Lumpur.

The scheme includes two dual three lane sections which run on an elevated superstructure for its full 6 km length. The scheme also includes five interchanges with twelve ramp structures and a fourteen lane elevated Toll Plaza. This highly urban nature of the area has forced the route along the river reserve and the alignment was developed and optimised to accommodate the meandering course of the river.

The superstructure of the Elevated Highway was constructed from precast concrete segmental box girders with dry joints, post tensioned with unbonded external tendons. The segmental superstructure was erected on a span-by-span basis using overhead erection gantries. Each span was independently supported and subsequently made fully continuous through the installation of second stage prestress.

Detailed Engineering Design services includes highway alignment and junction layouts, elevated structure consisting of segmental box girder and its setting out details, toll plaza and office building, highway lighting, noise barriers, emergency telephone, CCTV and drive information system and tolling facilities. A new 18-bed casting yard was set up to cast the 4,450 segments required.

MMSB's scope includes:

- Detailed engineering design of civil, structure, electrical & mechanical services
- Head office technical support during construction
- Construction supervision
- Preparation of specification of bills of quantities.

UPGRADING OF PASIR GUDANG FROM 2 LANE DUAL CARRIAGEWAY TO 3 LANE DUAL CARRIAGEWAY (FROM KANGKAR TEBRAU INTERCHANGE TO PLENTONG INTERCHANGE)



Client
Jabatan Kerja Raya Malaysia

Location
Pasir Gudang, Johor

Services
Civil & Structural / Geotechnical / Electrical

Completion Date
Ongoing (To be completed in 2015)

Project Value
RM 148 Million

MMSB Consult was appointed as the consulting engineer for the upgrading of the existing Pasir Gudang Highway by Jabatan Kerja Raya Malaysia.

The Pasir Gudang Highway is the major link to the Pasir Gudang port. The road runs in an east west direction with Pasir Gudang on the east end and Johor Bahru on the west end. The highway links to the North-South expressway via Kangkar Tebrau Interchange and Federal Route 1 and the "Second Link" via the Taman Perling Interchange.

The present contract is to upgrade the first 8 kilometres from the Kangkar Tebrau Interchange to Plentong Interchange including the widening of 3 existing bridges beyond the 8 kilometre stretch. This is the Government's action to upgrade the service of this highway due to the rapid growth in traffic volume. The carriageway is to be upgraded from dual 2-lane to dual 3-lane (JKR U5 standard). Upgrading also includes improvement of junctions and interchanges to achieve free flow of traffic along this stretch. This includes:-

- *Upgrading of FR17 from dual 2-lane to dual 3-lane carriageway.*
- *Widening of 8 existing bridges*

MMSB's scope covers preliminary and detailed design including preparation of tender documents, bills of quantities, construction supervision and technical support during construction.

- *for the improved geometry for the mainline, interchanges & ramp; junction improvement, design of new pavement.*
- *ground improvement.*
- *drainage.*
- *widening of existing bridges.*
- *road furniture and street lighting.*

MEMBINA JALAN PERSEKUTUAN (LALUAN 67) DARI PEKAN SUNGAI PETANI, DAERAH KUALA MUDA KE PEKAN TAWAR, DAERAH BALING

- PAKEJ 1: DARI PERSIMPANGAN LENCONGAN TIMUR KE PERSIMPANGAN LALUAN K620



Client
Jabatan Kerja Raya Malaysia.

Location
Sungai Petani, Kedah

Services
Civil & Structural / Geotechnical / Electrical

Completion Date
November 2014

Project Value
RM 77 Million

MMSB Consult was appointed as the Civil & Structural, and Electrical Consulting Engineer by the Jabatan Kerja Raya Malaysia for the upgrading of the existing Federal Route 67 (FT67).

The existing Federal Route 67 is one of the major routes linking western and eastern part of the Kedah state. Apart of the Federal Route 67 involves the road upgrading work, which is begins from the outside of Sungai Petani town in the district of Kuala Muda until Tawar town in the district Baling of the eastern part of the Kedah state.

The present contract is to upgrade the 8.7 Km length of road from the intersection at the Jalan Lencongan Timur to the intersection at Route K620 under the Package 1 contract.

The main objective of this project is to upgrade Federal Road (Route FT67) to R5 standard starting from the intersection at Lencongan Timur until the intersection at Route K620 for the approximate road length of 8.7 km.

The objective for the upgrading of the road is to increase the level of service (LOS) for the smooth movement of traffic, safety of road users and to improve the economy of the local community. The project consists of rehabilitating and upgrading of the following:

1. Construction of four lanes dual carriageway for first 5 Km length of road, and realignment of two lanes single carriageway for remaining 3.7 Km.
2. Improvement of five (5) existing junctions and improvement of existing ingresses and egresses.

3. Construction of four (4) new bridges crossing over existing streams.

The scope of the design shall include two phases:

1. DESIGN PHASE

- *Applications and presentations to obtain Government and Authority approval.*
- *Review of existing ground survey, soil investigation reports and other relevant information available for use in the design.*
- *Advise on any further ground survey, soil investigation, traffic studies, pavement evaluation which may be necessary for the design review.*
- *Detailed design, drawings, specifications and other documentation for any of the above mentioned as well as the followings:*
 - i) *Existing road upgrading from Single 2 Lane Carriageway to Dual 2 Lane Carriageway (4 lanes);*
 - ii) *Road pavement;*
 - iii) *Drainage & Hydrological Design;*
 - iv) *Geotechnical Design.*
 - v) *At grade intersections;*
 - vi) *Reinforced earth and concrete retaining walls;*
 - vii) *Foundations including piles and pile caps;*
 - viii) *Bridge structures including abutments, piers, crossheads, precast beams, deck slab and all other structural elements;*
 - ix) *Guardrails, handrails and all necessary road furniture;*
 - x) *Traffic signage and road marking;*
 - xi) *Electrical Works (street lighting and traffic light);*
 - xii) *Environmental Sedimentation & Control Plan (ESCP); and*
 - xiii) *Traffic Management Plan (TMP).*

2. CONSTRUCTION PERIOD

- *Head Office Technical Support during the construction period;*
- *Site supervision by the design consultant's site supervision staff to check that the construction works are carried out in accordance with the requirements of the Contract Agreement and local authority / relevant statutory requirements;*
- *3. Material inspections, testing, approval and verification both on and off site where and when required subjected to item 2 above;*

PALM OIL INDUSTRIAL CLUSTER (POIC) AT KUANTAN PORT CITY, KUANTAN, PAHANG



Client
East Coast Economic Region (ECER)
Development Council

Location
Kuantan, Pahang

Services
Civil & Structural
Electrical & Mechanical
Town Planning
Quantity Surveying
Landscape Architect
Environment
Traffic
Land Surveying

Completion Date
2010 - Ongoing

Project Value
RM 80 Million

MMSB Consult was appointed by ECER Development Council as the Principal consultant to carry out detailed infrastructure design and supervision for the development of Palm Oil Industrial Cluster (POIC) at Kuantan Port City, Kuantan, Pahang.

The ECER Master Plan identified the POIC as one of the key economic drivers to support the socio-economic development in the East Coast Region with total development area of 269.9 Hectares. The objective of the POIC is to stimulate the economic activities through strategic conglomeration of various manufacturing and processing plant in the area.

MMSB Consult undertook the Civil & Structural and Mechanical & Electrical consultancy services in-house.

Our responsibility as Principal Consultant is to appoint , coordinate and manage all the Supporting Consultants for all stages of the project which includes the following:

- i) *Town Planner*
- ii) *Quantity Surveying*
- iii) *Landscape Architect*
- iv) *Land Surveyor*
- v) *Traffic Consultant*
- vi) *Environmental Consultant*

PENANG SECOND BRIDGE PACKAGE 3A – SEISMIC ANALYSIS



Client
PJS Consult Sdn. Bhd.

MMSB Consult was appointed to carry out the seismic analysis of the Penang Second Bridge Package 3A structures. Package 3A connects the marine bridge with Bayan Lepas Expressway in Penang Island.

Location
Penang

The proposed work involves seismic analysis of 13 modules of Package 3A elevated structures. The superstructure consists of both continuous cast in-situ straight / curved box girder and beam-slab structure. Bored/Spun piles in group are adopted as foundation.

Services
Structure

Completion Date
2013

MMSB's scope includes:

- Fast track detail seismic analysis
- Submission of calculation to the Client

Project Value
Approx. RM 88 million



TERMINAL APPROACH ROAD (PACKAGE LF05B) OF NEW LCC TERMINAL AT KL INTERNATIONAL AIRPORT, SEPANG, SELANGOR

Client
Acre Works Sdn Bhd

Location
Selangor, Malaysia

Services
Structure

Completion Date
2013

Project Value
Approx. 25 million

MMSB Consult was appointed to carry out the design of superstructure of Terminal Approach Road Elevated Structure (Package LF05B) for the proposed development of New LCC Terminal at KL International Airport, Kuala Lumpur, Malaysia.

The proposed work involves the design of dual single lane carriageway of approx. length 500m. The total width of the each carriageway is 7.4m. The superstructure consists of precast segmental box girder of span length varies between 24m and 36m. The spans are simply supported with continuous deck over 3/4 pier supports to reduce the number of movement joints.

MMSB's scope includes:

- Fast track analysis and detail design of superstructure
- Issuance of construction drawings

PROPOSED PAVEMENT REHABILITATION & ASSOCIATED WORKS - SECTION N4 & SECTION C1, NORTH-SOUTH EXPRESSWAY



Client
PLUS Expressways Berhad

Location
Perak

Services
Civil Works

Completion Date
2012

Project Value
RM 34 Million

MMSB Consult was appointed as Civil Consulting Engineers for the design and construction supervision of the Proposed Pavement Rehabilitation & Associated Works at Km 185.00 to Km 189.30 along Bandar Bahru to Bukit Merah (Section N4), Km 319.10 to Km 315.00 along Tapah to Gopeng (Section C1) and Km 297.00 to Km 293.27 along Tapah to Simpang Pulai (Section C1), North-South Expressway.

The project involves pavement rehabilitation works for approximately 12.13 Km length of north bound carriageway comprising fast lane, slow lane, emergency lane and verge. These works are part of PLUS yearly maintenance programme of Pavement Structural Overlay (PSO) works under Network Maintenance Management to ensure the structural capacity, riding comfort and road user safety in order to maintain the expected level of service during the concession period.

The scope includes, pavement overlay works, road markings, road furniture, earthworks, drainage works and construction supervision and technical support during construction as detail below:

- Review of Pavement Investigation Data (viz., Visual Condition Survey, FWD Data, Pavement Coring, DCP Data, Trail Pits, Laboratory tests on samples) provided by Client.
- Carryout pavement structural overlay design using mechanistic approach.
- Carryout geometric design viz., horizontal & vertical alignment, generation of cross sections based on the topographic survey data supplied by Client.
- Preparation of preliminary and detail design report on Pavement Structural Overlay.
- Preparation of pavement strengthening scheme layout and cross section drawings including tapering details.

PENANG SECOND BRIDGE PACKAGE 3A – REDESIGN OF MAINLINE PILES



Client
Jambatan Kedua Sdn. Bhd.

Location
Penang

Services
Structure

Completion Date
2011

Project Value
Approx. RM 26 million

MMSB Consult was appointed to carry out the redesign of Mainline piles of Penang Second Bridge Package 3A Mainline structures. Package 3A connects the marine bridge with Bayan Lepas Expressway in Penang Island.

The proposed work involves the redesign of pile foundation for mainline structures using 1m diameter spun piles to fasten the construction work. The superstructure of mainline consists of beam-slab structure.

MMSB's scope includes:

- *Fast track analysis and detail design*
- *Issuance of construction drawings*
- *Head office technical support*

IMPROVEMENT AND MAINTENANCE OF IT CORRIDOR IN CHENNAI



Client
TDM Infrastructure Private Limited, India

Location
Chennai, India

Services
Civil & Structural,
Electrical

Completion Date
2009

Project Value
RM 80 Million

MMSB Consult was appointed to carry out detailed engineering design services for Civil, Structural, Electrical works.

The proposed work involves widening and upgrading of existing 18km Old Mahabalipuram Road (OMR) from Madhya Kailash to Siruseri including the improvement of 2.05km existing ECR link connecting OMR and ECR. The road is divided into 3 milestones, namely

- i) MS1 – 3.05km (Ch0.0 to Ch3100)
- ii) MS2 – 10km (Ch20000 to Ch30400)
- iii) MS3 – 7km (Ch13000 to Ch20000)

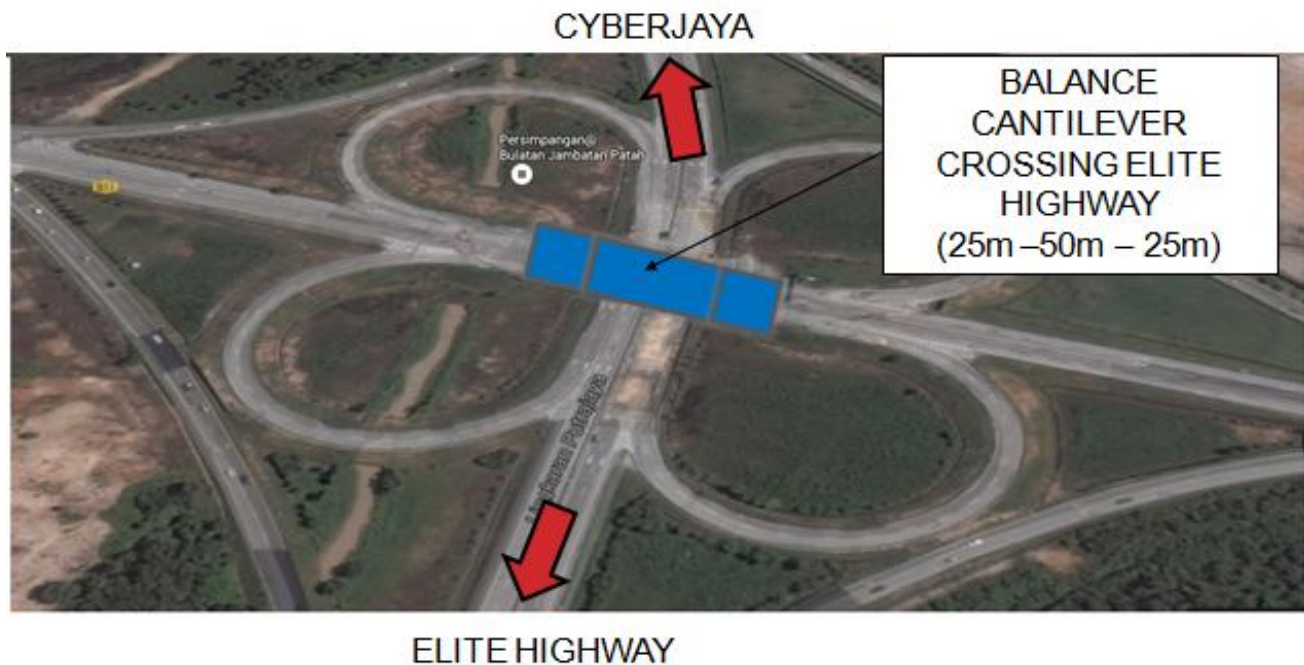
MMSB's scope includes:

- a. Overall design review
- b. Fast track detailed engineering design
- c. Issuance of construction drawings

Various detailed design works carried out by MMSB includes:

- Geometrical design modifications where necessary.
- Storm water drainage design.
- Cover slab design for SWD & utility service corridors.
- Cut off wall designs due to split level between main CW & service road.
- Retaining wall design at either end of culverts.
- Foundation details for street lighting and cantilever signages.
- Preparation of detail road signage and road marking drawings.
- Design of junction improvement schemes and drawings.
- Details of median openings & interfacing between service road and main CW.
- Detail of bus shelters including, drawings for construction.
- Design details of culvert extension encasing, water pipe (for sprinkler system) through central median, drawings.

RE-CONSTRUCTION OF A NEW BRIDGE & OTHER ANCILLARY WORKS AT CLOVERLEAF INTERCHANGE AT KM 2.2 OF PUTRAJAYA LINK TO SELANGOR SCIENCE PARK 2, SEPANG



Client Acre Works Sdn Bhd	The proposed elevated structure consists of 3 spans segmental box girder of span length 25m + 50m + 25m. The superstructure consists of 3 numbers continuous precast segmental PSC single cell box girders to be constructed using balance cantilever construction method and to be stitched together. The foundation consisted of single / groups of large diameter bored piles and is connected by rigid pile cap at the top.
Location Selangor	
Services Alternative Design	MMSB Consult is engaged as Alternative Design Consultant to provide tender design, detailed design and preparation of construction drawings.
Completion Date 2016	MMSB's scope includes the alternative design of elevated structure.
Project Value Approx. RM 15 Million	Salient Features: <ul style="list-style-type: none"> • Continuous precast segmental PSC single cell box girder. • Balance cantilever construction method for box girders. • Large diameter bored piles for foundation.

SOUTHVILLE CITY INTERCHANGE



Client
Acre Works Sdn Bhd

Location
Selangor

Services
Civil and Structural
-Alternative Design

Completion Date
2017

Project Value
RM 70 Million

The entry and exit to Southville City from the North South Highway consist of 4 ramps which include 2 at-grade and 2 elevated structures. The superstructure of the elevated structure consists of continuous precast segmental PSC single cell box girder to be constructed using balance cantilever construction method for the portion crossing the North South Highway whereas beam-slab structure is proposed on both sides of segmental box girder. The foundation consisted of single/groups of large diameter bored piles and is connected by rigid pile cap at the top.

MMSB was engaged as the Alternative Design Consultant to provide tender design, detailed design and preparation of construction drawings.

MMSB's scope includes the alternative design of:

- Alignment Plan and Profile,
- Civil works,
- Elevated structure and
- Geotechnical works.

Salient Features:

- *3 tier interchange.*
- *4 directional ramps on North South Highway.*
- *Continuous precast segmental PSC single cell box girder with integrated parapet for the two ramps crossing North South Highway.*
- *Balance cantilever construction method for box girders.*
- *Large diameter bored piles for foundation.*

CONSTRUCTION OF ELEVATED U-TURN AT KM 37.5, LEBUH RAYA SHAH ALAM



Client
KESAS Sdn. Bhd.

Location
Subang, Selangor

Services
Civil & Structural / Geotechnical /
Mechanical & Electrical

Completion Date
March 2014

Project Value
RM 23.7 Million

MMSB Consult was appointed as the civil & structural and mechanical & electrical consulting engineer for the proposed Construction of Elevated U-Turn at Km 37.5, Lebuhraya Shah Alam by KESAS Sdn. Bhd.

The proposed works comprise the construction of following components:

- Elevated U-Turn at Km 37.5 near Tujuan Bridge crossing;
- Conversion of existing 4-Phase traffic signal to 2-phase traffic signal at Kewajipan Interchange by closing the right turn movements (Ramp B & D);
- Modifications to the traffic islands at Kewajipan Interchange to complement the traffic signal conversion from 4-phase to 2-phase; and
- Upgrading the CCTV at Kewajipan Interchange and to be integrated with Highway Toll Plaza.
- Additional lane widening from end of elevated U-Turn to Subang exit (Ramp D) of Kewajipan Interchange.

MMSB's scope covers preliminary and detailed design including bills of quantities, construction supervision and technical support during construction of the following project elements:

- *Alignment for the elevated U-Turn and additional lane widening,*
- *Junction improvement, design of new pavement and earthworks,*
- *Foundation, geotechnical & ground improvement works,*
- *Drainage works (elevated & at-grade).*
- *New bridge structures, retaining structures.*
- *Road marking, signage, and road furniture*
- *Street lighting, CCTV and Traffic Lights*

PENANG BRIDGE WIDENING



Client
Acre Works Sdn Bhd

Location
Penang

Services
Civil & Structural

Completion Date
2009

Project Value
-

MMSB Consult was appointed as the Structural Consulting Engineer by the specialist precast beam precaster Acre Works Sdn. Bhd. to optimise the precast beam quantities for the Widening of Existing Penang Bridge Approach Spans project.

The widening of the existing Penang Bridge consists of the widening of each carriageway from the existing 2 lanes to 3 lanes. The widening will be carried out by constructing additional superstructure, crosshead, pier, pilecap and piles on each side of the existing bridge. The bridge deck, crosshead and the pilecap to be constructed will be connected to the existing bridge. The widening of the superstructure consists of a U Beam and an I Beam on each side of the existing bridge.

The scope of work includes the optimisation of quantities of Precast U Beam and I Beam and the corresponding shop drawings preparation.

MMSB's scope includes:

- *Optimisation of Precast U Beam and I Beam quantities*
- *Preparation of Shop Drawings for the Precast Beams*
- *Casting Bed Design*
- *Technical Support during Beam Casting.*

COLOMBO-KATUNAYAKE EXPRESSWAY (CKE)



Client
Vinci Construction – Macroworks JV

Location
Colombo, Sri Lanka

Services
Civil & Structural
Electrical & Mechanical

Completion Date (Design)
2008

Project Value
USD 210 Million

VINCI – Macroworks JV invited MMSB Consult to provide full engineering design services for the proposed Colombo-Katunayake Expressway (CKE), a 26 km open toll expressway linking between Colombo City and the Bandaranayake International Airport at Katunayake. The highway was constructed as two (2) lane dual carriageway, with the first 1.4 km constructed as a (3) lane dual carriageway.

The highway involved the construction of 3 Viaducts (2 km), 19 Bridges, 1 bridge over rail line, 6 underpasses, 3 pedestrian underpasses and 7, pedestrian crossing over the expressway. There are four (4) main interchanges and approximately 24.42km of embankment fill road. The construction will also include 3 km of river and canal diversion.

MMSB's scope includes:

Preliminaries and detailed engineering design of the following:-

- Geometrical and alignment design.
- Interchanges and junctions.
- Viaduct/bridges/box culverts structures.
- Surface drainage and culvert crossing design.
- Geotechnical design.
- Retaining wall design.
- Foundation design for structures.
- Road pavement.
- Preparation of detailed road signage drawings, road marking drawings.
- Medium and low electrical services, street lighting and high mast design.
- Civil, Structural and M&E design for toll canopy building, toll control centre & supervisory building and maintenance building.
- Preparing utilities relocation drawing for client submission to RDA.

PROPOSED PAVEMENT REHABILITATION & ASSOCIATED WORKS - YONG PENG SELATAN TO PAGO, SECTION S3, NORTH-SOUTH EXPRESSWAY



Client
PLUS Expressways Berhad

Location
Perak

Services
Civil Works

Completion Date
2008

Project Value
RM 4,665,923.01

MMSB Consult was appointed as the Civil Consulting Engineers for the design and construction supervision of the Proposed Pavement Rehabilitation & Associated Works for the North South Expressway at Km 98.80 to Km 102.00 (Northbound) along Yong Peng Selatan to Pagoh, Section S3.

The project involved pavement rehabilitation works for approximately 3.20 Km in length of north bound carriageway comprising of the fast lane, slow lane, emergency lane and verge. These works are part of PLUS yearly scheduled programme of Pavement Structural Overlay under Network Maintenance Management to ensure the structural capacity, riding comfort and road user safety in order to maintain the expected level of service during the concession period. The S3 section from Km 98.80 to Km 102.00 falls under the medium term design of pavement overlay.

MMSB's scope included the pavement overlay works, road markings, road furniture, earthworks, drainage works and construction supervision and technical support during construction as detailed below:

- Review of Pavement Investigation Data (viz., Visual Condition Survey, FWD Data, Pavement Coring, DCP Data, Trail Pits, Laboratory tests on samples) provided by PLUS.
- To carry out pavement structural overlay design using mechanistic approach.
- To carry out geometric design viz., horizontal & vertical alignment, generation of cross sections based on the topographic survey data supplied by Client.
- Preparation of preliminary and detailed design report on Pavement Structural Overlay.
- Preparation of pavement strengthening scheme layout and cross section drawings including tapering details.

KUALA LUMPUR – PENANG THROUGH TRAFFIC IPOH(S) TO JELAPANG NORTH SOUTH EXPRESSWAY

Client HSS Integrated Sdn Bhd	Project Lebuhraya Utara-Selatan Berhad (PLUS), the concessionaire for the North-South Expressway, intends to undertake modifications to the North-South Expressway for non-stop through traffic between Kuala Lumpur and Penang.
Location Ipoh, Perak	
Services Structural Design & Technical Support	The engineering design for the stretch of the expressway between Ipoh Selatan and Jelapang was awarded to HSS Integrated Sdn Bhd (HSSI) by PLUS. HSSI subsequently appointed MMSB Consult to undertake the structural design of only the bridge structures.
Completion Date 2007	This project involved the construction of 7 nos. new bridges along PLUS's expressway comprising of fully integral and semi-integral bridges. The superstructure consisting of U-beam for spans less than 30m and T-beam for spans more than 30m. The beams are supported on elastomeric laminated bearings.
Project Value RM 240 Million	<p>The substructures generally consist of circular shaped columns with cross-head on top and pile caps supported by the 1000mm diameter or 1200mm diameter bore piles.</p> <p>MMSB's scope includes:</p> <ul style="list-style-type: none">• <i>Preliminary study and design</i>• <i>Detailed design</i>• <i>Technical support during construction</i>

REMEDIAL WORKS TO SLOPE FAILURE AT LOT 36229, TAMAN JOHOR JAYA GROUND RESERVOIR, PLENTONG



Client
S A J Holding Sdn Bhd

MMSB Consult was appointed as the Geotechnical Engineer for the Remedial Works to Slope Failure at Taman Johor Jaya Ground Reservoir.

Location
Johor Bahru

The ground reservoir, which is situated on high land at Lot 36229 along Jalan Anggerik 20, purpose is to supply water to users in Taman Johor Jaya, Plentong, Johor Bahru. However, the stability of the reservoir was greatly affected, especially at the west end of the boundary during the heavy rainfall between December 2006 and January 2007. As a remedial measure, the failed slope was stabilized with horizontal drain and the construction of Crib Wall.

Services
Geotechnical Engineering
Civil & Structural
Electrical & Mechanical

Completion Date
2007

MMSB's scope includes:

Project Value
-

- *Review of Soil Investigation data*
- *Back analysis of failed slope*
- *Stability analysis*
- *Design of different types of remedial measures*
- *Design of Crib Wall System along with horizontal drains*
- *Construction supervision during implementation stage*

REMEDIAL WORKS TO SLOPE FAILURE AT LOT 11930, TAMAN UNGKU TUN AMINAH GROUND RESERVOIR, SKUDAI



Client
Azyan RepSYS Sdn Bhd

MMSB Consult was appointed as the Geotechnical Engineer for the Remedial Works to Slope Failure at Taman Ungku Tun Aminah Ground Reservoir.

Location
Johor Bahru

The ground reservoir, which is situated on high land at Lot 11930 along Jalan Tun Aminah, Jalan Nakhoda 16 and Jalan Nakhoda 26 purpose is to supply water to users in Taman Ungku Tun Aminah, Skudai, Johor Bahru. However, the stability of the reservoir was greatly affected, especially at the southern, east and north sides part of the boundary during the heavy rainfall between December 2006 and January 2007. As a remedial measure shortcreting with short nails and soil nail with grid beam system were proposed. Horizontal drains were also proposed to reduce seepage pressure.

Services
Geotechnical Engineering
Civil & Structural
Electrical & Mechanical

Completion Date
2007

MMSB's scope includes:

Project Value
-

- *Review of Soil Investigation data*
- *Back analysis of failed slope*
- *Stability analysis*
- *Design of different types of remedial measures*
- *Design of Soil Nail with Grid Beam System*
- *Construction supervision during implementation stage*

NORTH-SOUTH BYPASS TUNNEL (NSBT) DESIGN LOT 3480 BR 05 – PEDESTRIAN OVERPASS

Client
Maunsell / Parsons Brinkerhoff Design Joint
Venture, Australia

Location
Brisbane, Australia

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2007

Project Value
2.5 Billion

The North-South Bypass Tunnel (NSBT) is part of Brisbane's Transport Plan and the first critical component of the Brisbane Lord Mayor's Trans-Apex vision that aims to reduce deficiencies in Brisbane's urban road network.

Overall the project covers 5.8km and includes dual twin lane tunnels, approximately 4.8km in length.

Maunsell Australia Pty Ltd and Parsons Brinkerhoff Australia Pty Limited have been commissioned to design the \$2.5 b North South Bypass Tunnel Project. Maunsell/ Parsons Brinkerhoff Design Joint Venture (MPB) is responsible for the design.

MMSB Consult was appointed as a sub-consultant to carry out Detail Structural Design works for the Pedestrian overpass over South Eastern Freeway.

The services to be provided during this phase:

- *Develop the design concepts shown in the Finalised Design Concept (FDC) and general arrangement.*
- *Resolving any design issue raised in the verification process and comments.*
- *Issuance of construction drawings.*

Various detail design aspects includes:

- *Bored pile foundation*
- *Footing foundation*
- *Piers structures*
- *Elastomeric bearings*
- *Prestressed precast super tee beam*
- *Prestressed precast deck unit beam*
- *Balustrade*
- *Anti-throw screens*
- *Access ramps & associated supports*

THIRD LANE WIDENING BETWEEN TANJUNG MALIM AND SLIM RIVER, NORTH SOUTH EXPRESSWAY (PACKAGE 4)



Client
Project Lebuhraya Utara - Selatan Berhad.
(PLUS)

Location
Tanjung Malim, Perak

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2007

Project Value
RM 150 Million

MMSB Consult was appointed as the Civil & Structural, Electrical & Mechanical Consulting Engineer for the Third Lane Widening between Tanjung Malim and Slim River, as a part of the North South Expressway Widening Scheme.

The Third Lane Widening between Tanjung Malim and Slim River mainly involved the widening the existing 2 lane dual divided carriage way to 3 lane dual divided carriageways for a total length of 28.215 km.

The works included site clearance, earthwork in cut and fill, formation for widening portions, ground improvement works, pavement works (new pavement & strengthening of existing pavement), existing of culverts, drainage works, widening of bridge structures, extension of culverts, drainage works, widening of bridge structures extension of vehicular box culverts, retaining structures, relocation of utilities section water marine optical fibre cables etc, street lighting and high mast lighting, road margins, road furnitures, road signage, emergency telephone system plus communications system and traffic management during constructions.

MMSB's scope includes the following:

- *Review of data and As Built Drawings.*
- *Preliminary Engineering Design.*
- *Detailed Engineering Design of Civil & Structural works for mainline and interchanges, drainage cross drainage works, vehicular box culverts etc.*
- *Utility relocation.*
- *Street lighting, road furniture, road markings and signs.*
- *Tender documents, specifications, BOQ, cost estimate.*
- *Assist in obtaining various clearances from Govt. Agencies.*
- *Construction supervision during implementation stage.*

The superstructures are supported on single leg or portal piers. The foundations consist of groups of bored piles and are connected by rigid pile cap at top.

MMSB's was responsible for

- *Structural design inclusive of superstructure and substructure and foundation of Interchange 3, Interchange 4 & Interchange 5.*
- *Utility diversion of all interchanges.*
- *Street lighting design of all interchanges.*
- *Construction supervision.*

UPGRADING OF PASIR GUDANG HIGHWAY PERLING INTERCHANGE



Client
S.P. Setia Berhad.

Location
Pasir Gudang, Johor

Services
Civil & Structural / Geotechnical / Electrical

Completion Date
2006

Project Value
RM 180 Million

MMSB Consult was appointed as the consulting engineer for the upgrading of the existing Pasir Gudang Highway by Setia Precast Sdn Bhd who was awarded the contract by the Government of Malaysia on a 'Design & Build' basis.

The Pasir Gudang Highway is the major link to the Pasir Gudang port. The road runs in a east west direction with Pasir Gudang on the east end and Taman Perling on the west end. The highway links to the North-South expressway via Kangar Tebrau interchange and Federal Route 1 and the "Second Link" via the Taman Perling interchange.

The present contract is to upgrade the first 3.5km from Jalan Johor Bahru to the Perling Interchange due to the rapid growth in traffic volume. The carriageway is to be upgraded from dual 2-lane to dual 3-lane (JKR U5 standard). Upgrading also includes improvement of junctions and interchanges to achieve free flow of traffic along this stretch. The improvement works includes:-

- Upgrading of FR17 from dual 2-lane to dual 3-lane carriageway.
- Upgrading of 3 nos. signalised junctions to left-in left-out and provision of one elevated U-turn and one underpass structure for right turning movements.
- Upgrading of Perling Interchange with two nos. elevated U-turns.
- Widening of three existing bridges.

MMSB's scope covers preliminary and detailed design including bills of quantities construction supervision and technical support during construction.

- for the improved geometry for the mainline, interchanges & ramp; junction improvement, design of new pavement.
- ground improvement.
- drainage.
- new bridges and retaining structures, widening of existing bridges.
- road furniture and street lighting.

PRIMARY DISTRIBUTORS ROAD U4



Client
IJM Corporation Bhd

Location
Putrajaya

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2004

Project Value
RM 150 Million

MMSB Consult was appointed as the Civil & Structural engineering consultant for the Primary Distributors Road U4 in Putrajaya. The road stretches from the upgraded B15 state road at the Southern Boundary of Putrajaya and traverses through Putrajaya for some 4500m and then follows along the corridor of the Malay / Orang Asli reserve before joining up with the completed portion of the Secondary Distributors Road R8, in Putrajaya.

The total length of the mainline and the secondary distributors are approximately 11.2km and 2.2km respectively.

The project involves four nos. interchanges, one diamond interchange, one trumpet interchange, thirteen nos. of bridges, two nos. of underpasses, several motorcycle crossing structures & utility protection structures. The structural forms for the bridge structures consisted of both post-tensioned concrete box girder and conventional beam-and-slab.

MMSB has been entrusted with the design of the structural works and the civil and geometric design of two cloverleaf interchanges on a "Design & Build" basis.

The scope includes:

- Two cloverleaf interchanges (LB1 & LB4) and associated earth works.
- Eight nos. of continuous post-tensioned with variable depth concrete box girder bridges at each of the interchanges (BR1, BR2, BR3, BR4, BR6, BR11, BR12, BR13).
- A directional ramp bridge composing of a continuous post-tensioned concrete box girder and beam & slab structural forms (BR5).
- Three nos. of beam & slab bridges crossing over the Rail Link (BR7), Langat River (BR8) express and Lima Manis River (BR14).
- Two nos. of beam & slab bridges crossing over disused mining ponds (BR9 & BR10).
- Two nos. vehicular underpasses (UP1 & UP2).
- Motorcycle crossing structures at all the interchanges.
- Utility services protection structures.

CYBERJAYA DUAL CARRIAGEWAY



Client
Cyberview Sdn Bhd

Location
Cyberjaya

Services
Civil & Structural,
Electrical & Mechanical

Completion Date
2004

Project Value
RM 120 Million

MMSB Consult was appointed the Civil & Structural, Electrical & Mechanical engineering consultancy services for the 1st road works in Cyberjaya accessing the Multimedia University which is the flagship development for the Multimedia Super Corridor (MSC).

Construction commenced simultaneously with the design, requiring MMSB engineers to prepare fast-track designs to keep the contractor going while simultaneously ensuring sufficient details were provided to facilitate a high standard of construction & finish.

The proposed 7 km highway is a 4 lane distributor road to the Multimedia University connecting the B15 highway and the Putrajaya link road. Part of the highway, for 2.5km is on piled embankment through peat swamp. Part of the 3.5km of 4 lane perimeter road around the Multimedia University includes 2 signalized junctions to the main access and to two other lower capacity junctions. Again piled embankment was required for 0.5 km through peat swamp. A series of complex signalized junctions were later on added to the design program that linked the main road. A total of 7 numbers of junctions were added.

MMSB's scope includes:

- *Highway alignment design.*
- *Roadside drainage and cross-culverts design.*
- *Contract documentation and administration.*
- *Geotechnical solution to poor soil conditions – pile embankment, soil replacement.*
- *Street lighting.*
- *Road marking and signages.*
- *Supervision of construction and technical support during construction.*

BR4 - JAMBATAN SERI SETIA



Client
Putrajaya Holdings Sdn. Bhd.

Location
Putrajaya

Services
Civil & Structural,
Electrical & Mechanical

Completion Date
2002

Project Value
RM 35 Million

MMSB Consult was appointed as the Civil, Structural, Electrical and Mechanical Consultants for Bridge BR4, named Jambatan Seri Setia. The bridge is a dual three lane carriageway located at south – east corner of Putrajaya, the new Federal Government Administrative centre for Malaysia. The bridge spans across the lake and the promenades connecting the Precinct 19 on the South – East to Precinct 3, 4 and Boulevard on the North – West.

The concept designs for the bridge were developed for several shorter spans option with the precast pretension “M10” beams and slab deck option with spans up to 30m being selected from the alternatives. The bridge structure consists of 7 spans of 30m with a total length of 210m. The total width is 35.60m. The deck is constructed of precast pretension beams and in-situ deck. Piers consist of 4 arch shaped columns, supported on precast driven span piles and pile caps.

Two staircases providing access for pedestrians from bridge deck walkways to the promenade. The bridge is aesthetically enhanced with:

- *Precast fascia panels with architectural features.*
- *Planter boxes on the median.*
- *Railing with architectural features.*
- *Illumination of bridge with decorative lights.*

MMSB’s scope includes :

- *Value engineering.*
- *Architectural details.*
- *Detailed superstructure design.*
- *Detailed substructure & foundation design.*
- *Design of electrical and mechanical services.*
- *Tender documentation.*
- *Tendering and evaluation.*
- *Construction supervision and technical support during construction.*

MIDDLE RING ROAD 2 PACKAGE II (THE MISSING LINK)



Client
Sukmim - Bumihighway - KKM(W) J.V

Location
Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2002

Project Value
RM 238 Million

MMSB Consult was appointed as the Consulting Engineers for the alternative design of a viaduct structural forming part of the Design and Construct (D&C) contract for the Middle Ring Road 2 – Package (The Missing Link), which connects between the LDP & Package 10 of MRR2. The scheme includes the dual three-lane carriageway which runs elevated of a length of approximately 1.7 km. The alignment of the highway has forced the route along the median of the existing roads, optimising the land use and construction was carried out in congested Urban Development.

The elevated portion (1.6km) was made up of precast segmental box girders with dry joints, post-tensioned with unbounded external tendons. The approach abutment structures at both ends consisted of a combination of frame structure & RC wall. An alternative design of box section with 5.24m soffit width, 2.5m depth and 12.16m segment width was used to suit the existing available moulds.

The simply supported superstructure was erected on a span-by-span method using overhead erection gantry. This gantry had the facility to side shift to allow the erection of side span. The superstructure consists of 1020 segments for 34 spans @ 45.2m.

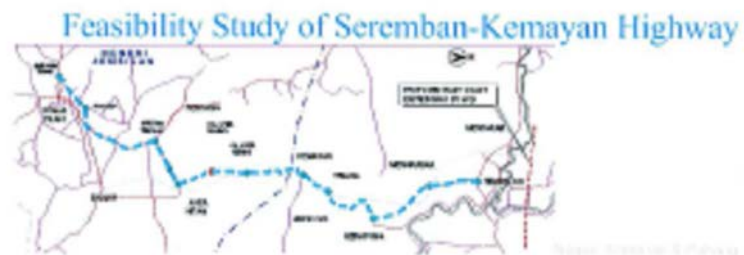
The substructures generally consist of a single octagonal-shaped column with a long cantilever crosshead to support the two boxes. Structural setting out co-ordinates for the precast segments and pier locations were determined using computer modeling with the MOSS program.

The scope of work included structural design, street lighting, deck drainage system as well as highway alignments.

MMSB's scope includes:

- Detailed design for contractor.
- Post-tensioned segmental bridge design.
- Construction supervision and technical support during construction.

FEASIBILITY STUDY OF SEREMBAN-KEMAYAN HIGHWAY



Client
Highway Planning Unit, Malaysia

Location
Negeri Sembilan & Pahang

Services
Traffic and Transportation, Landuse
and Socio-economy, Environmental
Screening

Completion Date
2001

Project Value
-

MMSB Consult was appointed to carry out the feasibility study of a direct linkage of road from Seremban in Negeri Sembilan to Temerloh of Pahang State for a distance of approximately 140km. The proposed road is intended to open up the central region of Negeri Sembilan and Pahang and stimulate developments and economic growth along its corridor. The road is expected to provide an alternative route and a more direct access between the two towns.

The objectives of the study includes:

- To investigate the technical and economic feasibility of alternative alignments for the proposed road project and thereafter to recommend a preferred alignment, including the optimal timing of its construction.
- To assess the environmental impacts of the road project and adopt environment criteria in the selection of the preferred alignment. The study will also predict and determine the significant residual environmental impacts to the community.

MMSB's scope includes:

- Traffic study including collecting traffic data, traffic survey and projections using EMM2 modelling and road network analysis.
- Detailed preliminary Engineering Design based on the preferred alignment taking into consideration all on going and proposed roads (including toll roads) in the study area. The study looked at the possibility of extending the proposed road to meet the East Coast Expressway at East of Temerloh. Estimated prime item construction cost and preparation of right of way plan and cost estimate.
- Economic Analysis. Estimate the expected cost-benefits ratio, internal rate of return, net present value and first year rate of return, to determine the viability of each alternative alignment and perform sensitivity tests to ascertain the robustness of the economic indicators.
- Environmental Impact Assessments. Prepare environmental assessment matrix to identify and define a wide spectrum of physical, chemical, ecological and socio-economic related impacts, in terms of their nature, temporal and spatial implications. Identifying appropriate mitigating or abatement measures and residual impacts. Formulate EMP during project construction and operation phases.

BR1 - JAMBATAN SERI BAKTI



Client
Putrajaya Holdings Sdn Bhd

Location
Putrajaya

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2000

Project Value
RM 20 Million

MMSB Consult was appointed the engineering consultant for Civil, Structural, Electrical and Mechanical for Bridge BR1, named Jambatan Seri Bakti. The bridge is a dual two lane carriageway, forms part of the main protocol route in Putrajaya, the new Federal Government Administrative Centre for Malaysia. Spanning across the lake surrounding the boulevard area to the promenade and linking to the secondary road leading to the Deputy Prime Minister's residence. It also connects the highly prestigious government precinct in the north to Precinct 16 in the south.

The original structural concept was based on a bowstring steel arch structure with a single span of 250m. Due to time constraint, this was later replaced by a 9 – span conventional concrete structure having end spans of 12.5m with 34m intermediate spans totalling to 270m long. Precast pre-tensioned super 'T' beams with in-situ concrete slab form the bridge deck suspended on the headstock. The headstock is supported on twin pier columns resting on spun prestressed concrete piles.

A staircase provides access for pedestrians from the walkways incorporated on both sides of the bridge deck down to the promenade.
The bridge is aesthetically enhanced with :-

- *Minaret domed pavilions with observation deck located at each pier*
- *Planter boxes*
- *Articulated safety railings designed in harmony with the promenade architecture*
- *Decorative illumination on the minaret and balustrades*

MMSB's scope includes :

- *Value engineering*
- *Architectural details*
- *Detailed superstructure design*
- *Detailed substructure & foundation design*
- *Design of electrical & mechanical services*
- *Tender documentation*
- *Tendering and evaluation*
- *Construction supervision and technical support during construction*

MATRADE ROAD



Client
Johawaki - Ahmad Zaki Joint Venture

Location
Kuala Lumpur

Services
Civil & Structural,
Electrical & Mechanical

Completion Date
2000

Project Value
RM 19 Million

MMSB Consult was appointed by Johawaki – Ahmad Zaki Joint Venture as the engineering consultant for Civil & Structural and Electrical Services Engineer for the Proposed MATRADE Road.

The project was to upgrade and improve the alignment of the existing access from Jalan Duta and Jalan Sri Hartamas 1 which leads to the MATRADE Building and the Masjid Wilayah Persekutuan. The project involves widening and upgrading of the alignment of the existing access roads and intersections to JKR U6 Standard with soft and hard landscaping. The total length of the road is 1.7km.

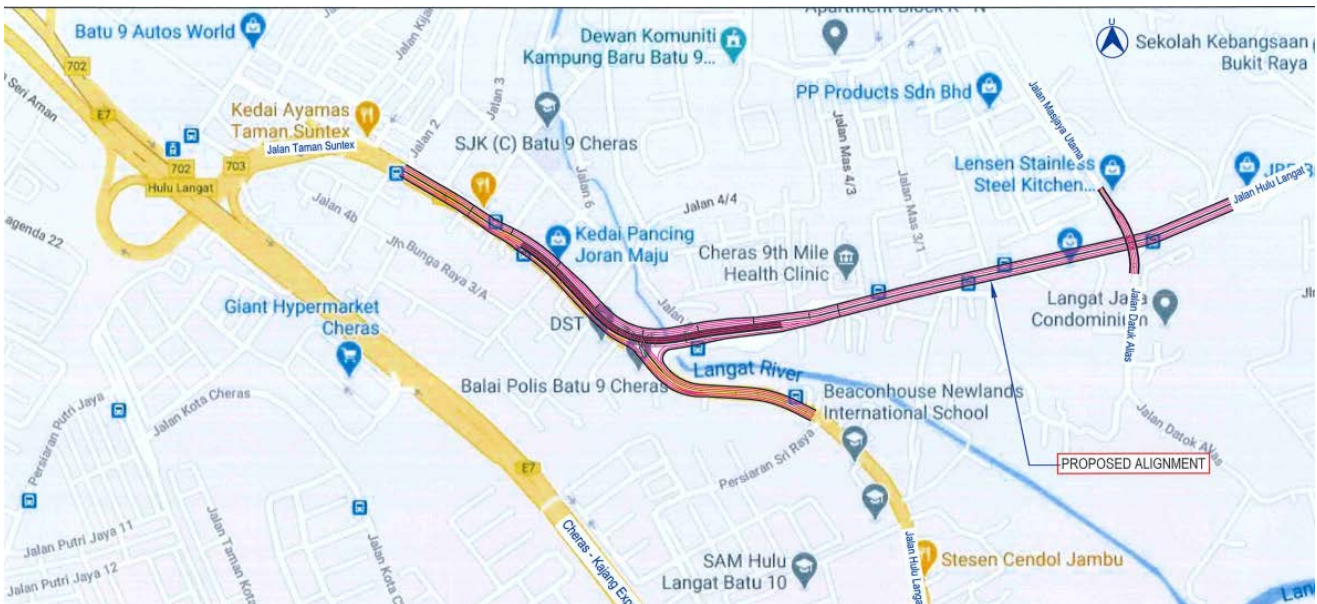
Due to site constraint and availability of road reserve, a couple of R.C. retaining walls and an elevated structure were constructed to achieve the objective of the project to widen and improve the geometry of the existing access roads to dual carriageway. The traffic signal system at the junctions is incorporated with latest state of art traffic system and conforms to SCATS system of DBKL.

The project was successfully completed and opened to traffic in September 2000. These roadway form an important road linkage to the landmark buildings in Wilayah Persekutuan namely the MATRADE Building and the Masjid Wilayah Persekutuan with the existing road network system.

MMSB's scope includes:

- *Widening and improvement of geometry of existing access roads to JKR U6 standard*
- *Improvement of junctions with proper diverging and merging lanes*
- *Improvement of traffic signal system to DBKL requirements*
- *Design of roadside drainage system and drainage culverts*
- *Design of R.C. retaining wall*
- *Design of elevated structure*
- *Design of appropriate soil treatment and foundation works*
- *Street lighting and utility relocation and coordination works*
- *Documentation and specification*
- *Contract and site administration*

MENAIKTARAF JALAN PERSEKUTUAN FT3210 DARI PERSIMPANGAN BATU 9 KE PERSIMPANGAN JALAN DATO' ALIAS TERMASUK PEMBINAAN JEJAMBAT MERENTASI PERSIMPANGAN BATU 9, CHERAS, DAERAH HULU LANGAT, SELANGOR (REKA & BINA)- DIRECTIONAL RAMP



Client
Acre Works Sdn Bhd and
Perunding Irzi Sdn Bhd

Location
Cheras, Selangor

Services
Structural, Geotechnical

Completion Date
2024

MMSB Consult Sdn Bhd was appointed to carry out the Structural and Geotechnical Design of the Directional Ramp for the Upgrading of Federal Road FT3210 from the Batu 9 intersection to the Jalan Dato' Alias intersection including the bridge construction across the Batu 9 intersection project in Cheras, Selangor.

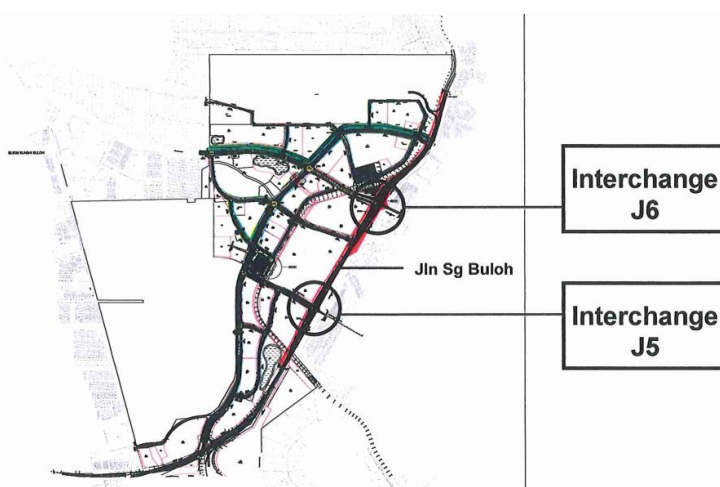
MMSB's scope of works includes

- Detailed Design of Directional Ramp Structure,
- Issuance of Construction Drawings,
- Construction Stage Head Office Technical Support related to the design,
- Construction Engineering support to Acre Works Sdn. Bhd. For superstructure.

5.0 Project Profile

ICE / ICE for Lenders

PROPOSED CONSTRUCTION AND COMPLETION OF COMMON INFRASTRUCTURE WORKS AT KWASA DAMANSARA TOWNSHIP DEVELOPMENT IN SUNGAI BULOH, SELANGOR -DIAMOND INTERCHANGE JUNCTIONS J5 AND J6



Client
Kwasa Land Sdn Bhd

Location
Sungai Buloh, Selangor

Services
Structural, Geotechnical

Completion Date
2018

MMSB Consult Sdn Bhd was appointed as Independent Checking Engineer (ICE) to carry out independent review of the Structural and Geotechnical Design of the **Diamond Interchange Junctions J5 and J6** of Proposed Construction and Completion of Common Infrastructure Works at Kwasa Damansara Township Development in Sungai Buloh, Selangor.

MMSB's scope of works includes

- Independent Check of Bridge and associated works,
- Independent Check of Geotechnical Works

Each of the Junctions consists of 7 nos. of 40m span beam and slab structure.

KL-KUALA SELANGOR EXPRESSWAY



FIGURE 2.1 : SCHEMATIC LAYOUT PLAN

Client
KL-Kuala Selangor Expressway Bhd

Location
Selangor

Services
Independent Checking Engineer for
Lenders

Completion Date
2011

Project Value
RM 958 Million

MMSB Consult has been appointed as an Independent Checking Engineer for the proposed KL-Kuala Selangor Expressway in Selangor Darul Ehsan. The estimated length of highway is 31.8km starting at Assam Jawa and ending at Templer Park connecting to Federal Route 1.

The highway comprises of the following:

- 5 interchanges
- 4 toll plazas
- 2 rest and service area
- 15 bridges
- Administration building, staff quarters, maintenance department and ancillary building

The scope of services comprises of the following:

Pre-construction

- To review the Engineering, Procurement and Construction Contract (EPCC) to ensure that the EPCC is compliant with the Concession Agreement (CA) and Supplementary Concession Agreement (SCA).
- Address the technical aspect of the project and comment on the appropriateness of the technical parameters and cost assumptions.
- Comment on the feasibility of the project schedule and its compatibility with the requirement of the CA and SCA.
- Review and comment on the reasonableness of the project cost.

During construction

- Construction monitoring for general compliance with the approved design, specifications and procedures established by the turnkey contractor.
- Review and certify all documentary evidence furnished to the Project Monitoring Agent for the purpose of releasing funds for the project.
- Prepare drawdown report for each drawdown and quarterly progress report prior to the completion of the project.

AL RAHA INTERCHANGES 4 & 6

Client Maunsell Consultancy Services Limited	MMSB Consult Sdn Bhd was appointed as the independent verification engineer for the four numbers bridges at Interchange 4 & 6 of the Al Raha Beach Development Project in Abu Dhabi.
Location Abu Dhabi	Interchange 4 bridges 4-MB-01 & 4-MB-02 and Interchange 6 Canal Road Bridges CRB-25A & CRB-25B are mainly cast-in-situ continuous box girder bridges of span length between 30m & 59m. The box girder will be erected using stage construction. AASHTO LRFD codes are used for the design.
Services Independent Checking Engineer for Bridge Structures	
Completion Date 2007	The scope of services of the independent checker covered the review of detailed design and drawings for the superstructures and substructure.
Project Value -	<p>The scope of work includes:</p> <ul style="list-style-type: none">• Detailed Design review of the superstructure• Detailed Design review of the substructure• Review of Detailed Design drawings

LEBUHRAYA KAJANG SEREMBAN (LEKAS)



Client
Lebuhraya Kajang Seremban Sdn Bhd

Location
Selangor and Negeri Sembilan

Services
Independent Checking Engineer for
Lenders

Completion Date
2007

Project Value
RM 766 Million

MMSB Consult has been appointed as Independent Checking Engineer for the proposed Lebuhraya Kajang Seremban which starts near Kajang in Selangor and end near Paroi in Negeri Sembilan. The estimated length of highway is 44.2km.

The highway comprises of the following:

- 6 interchanges
- 6 toll plazas
- 2 rest and service area
- Administration building, maintenance department and ancillary building

The scope of services comprises of the following:

Pre-construction

- To review the Engineering, Procurement and Construction Contract (EPCC) to ensure that the EPCC is compliant with the Concession Agreement (CA) and Supplementary Concession Agreement (SCA).
- Address the technical aspect of the project and comment on the appropriateness of the technical parameters and cost assumptions.
- Comment on the feasibility of the project schedule and its compatibility with the requirement of the CA and SCA.
- Review and comment on the reasonableness of the project cost.

During construction

- Construction monitoring for general compliance with the approved design, specifications and procedures established by the turnkey contractor.
- Review and certify all documentary evidence furnished to the Project Monitoring Agent for the purpose of releasing funds for the project.
- Prepare drawdown report for each drawdown and quarterly progress report prior to the completion of the project.

MUAR BYPASS



Client
Ranhill Civil Sdn Bhd

Location
Muar, Johor

Services
Independent Checking Engineer

Completion Date
2004

Project Value
RM 180 Million

MMSB Consult was appointed as Independent Checking Engineer for the cable stayed Bridge over Sungai Muar for the Proposed Muar Bypass Project in Johor Darul Takzim. The cable-stayed bridge is second bridge crossing over Sungai Muar.

The elevated viaduct is 632m in length, including a 264 m long cable-stayed bridge supported by two main pylons at the central span. At each pylon location, there are 7 nos. of stay cables, which run continuously from deck anchors in the main span to similar anchors in the back span and pass through the pylon in saddles. The superstructures consist of cast-in-situ concrete segmental box girder, post-tension with external tendons sheathed in HDPE ducts.

The scope of services of the independent checker covered the review of specifications, design criteria concept for the superstructures, substructure and foundation including the cable and saddle system.

MMSB's scope includes:

- *Review of concepts: Review of design criteria*
- *Review of concepts: Structural evaluation*
- *Design review and independent check of specification*
- *3D Global computer model of the cable- stayed bridge*
- *Design review and independent check of pylon pile-cap*
- *Design review and independent check of pylon legs*
- *Design review and independent check of pylon head*
- *Design review and independent check of concrete segments (approach and main bridge)*
- *Design review and independent check of cable system and saddle*
- *Design review of the foundation*

COMMERCIAL OFFICE COMPLEX, LOT 3C4, PRECINCT 3, PUTRAJAYA



Client
Putrajaya Holdings Sdn Bhd

MMSB was appointed as the concept design and independent check consultant for Civil, Structural, Electrical and Mechanical Services for the commercial office complex in Putrajaya.

Location
Putrajaya

The project is a design and built type of contract. MMSB was appointed to provide a conceptual design and bid document for the design and built package, and as an independent check engineer for the client. This project was designed as Class A commercial office complex comprising of a 13 storey office and retail spaces and 2 storey basement carpark with a total gross area of 61,000m².

Services
Civil & Structural
Electrical & Mechanical and Independent
Checking Engineer

Completion Date
2008

MMSB's scope includes:

Project Value
RM 100 Million

- Conceptual and system planning.
- Preliminary engineering and cost investigation.
- Conceptual engineering design and drawings.
- Tender bid documents and specification.
- Independent check engineers.
- Contract and site administration.
- Supervision of construction and installation, testing, commissioning and handing over.

ASIAN INSTITUTE OF MEDICINE SCIENCE AND TECHNOLOGY (AIMST) UNIVERSITY MALAYSIA



Client
Maju Institute of Education Development to
act as ICE to lender Bank Pembangunan
Infrastructure Malaysia Berhad (BPIMB)

Location
Kedah

Services
Independent Checking Engineer

Completion Date
2010

Project Value
RM 450 Million

MMSB Consult was appointed as the Independent Check Engineers by Maju Institute of Education Development (MIED), to act on behalf of Bank Pembangunan Infrastructure Malaysia Berhad (BPIMB) to review, monitor and oversee the Construction & Development Progress of the AIMST University.

The term loan approved by BPIMB for drawdown is RM 220 million which consists of RM 160 million for the construction development of the AIMST campus and RM 60 million for the purchase of the equipment for facilities equipment.

The main buildings at AIMST campus consists of:

- Faculty building, library and student centre.
- Administration building and the great hall.
- Engineering building and medical building.
- Sports facility with swimming pool and utility building.
- Staff and students accommodation.
- Interior design for bungalows and major landscape works.
- Electrical and mechanical buildings.
- Sewer treatment plant.
- Allocation for mosque and temple.
- IT and building management system.

The main equipments for drawdown recommendation consists of:

- Pharmacy equipment, engineering tools and equipment.
- Science and medical lab equipments.
- Dentistry and computer equipments.
- Furniture's and fittings.
- Office, cafeteria and sports fitness equipments.
- Air conditioning, motor vehicle, signboard, renovation and orchid farming.

MMSB's scope includes:

- Review, monitor and oversee the construction progress.
- To verify the physical existence of the specialist equipment according to the purchase order and delivery order.
- Preparation of draw down report for construction works and equipment purchase.

UPGRADING OF ROAD FROM BATU PAHAT – AYER ITAM

Client S.P. Setia Berhad	MMSB Consult has been engaged as an Independent Checking Engineer for the road bridges, pedestrian footbridges and box culverts for the proposed upgrading Federal Road 50 from Batu Pahat – Ayer Itam – Kluang, Johor Darul Takzim.
Location Batu Pahat - Ayer Itam, Johor	The main bridge is a single span of 40 m length using precast post-tensioning T beam. The bridge is crossing over Sungai Melantai.
Services Independent Checking Engineer	Under the scope of services, the independent checking activities cover the review of specification, design criteria, concept substructures and superstructures.
Completion Date 2004	
Project Value -	<ul style="list-style-type: none">• <i>Review of concepts: review of design criteria.</i>• <i>Review of concepts: structural evolution.</i>• <i>Design review and independent check of specification.</i>• <i>Design review and Independent check of superstructure and substructure.</i>• <i>Review of structural drawings calculation and compliance with all relevant JKR specification, and good engineering practices and acceptable codes of practices.</i>

5.0 Project Profile

Buildings

IPD JALAN TRAVERS, KUALA LUMPUR



Client
Kementerian Dalam Negeri
Polis Di Raja Malaysia

MMSB Consult was appointed as the consultant engineer for Civil & Structural and Mechanical & Electrical services for the IPD Jalan Travers, Bangsar, Kuala Lumpur.

Location
Jalan Travers, Kuala Lumpur

The building comprises of two blocks which consists of the following :

- i) One (1) unit of nine (9) storey office block,
- ii) One (1) unit of eight (8) storey staff quarters, and
- iii) One (1) unit of guard house

Services
Civil & Structural
Mechanical & Electrical
Construction Supervision

at Lot 55, seksyen 70, Jalan Selangor off Jalan Travers, Kuala Lumpur.

Completion Date
2017

MMSB's scope includes:

Project Value
RM 60 Million

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Representation at site, project and consultant meetings.*
- *Liaison with approving authorities.*
- *Supervision of construction.*
- *Installation, testing, commissioning and handing over.*

JKR WORKSHOP, PANDAN PERDANA, CHERAS



Client
Jabatan Kerjaraya Malaysia

Location
Pandan Perdana, Cheras

Services
Civil & Structural
Mechanical & Electrical
Construction Supervision

Completion Date
2017

Project Value
RM 250 Million

MMSB Consult was appointed as the consultant engineer for Civil & Structural and Mechanical & Electrical services for the JKR Workshop, Pandan Perdana, Cheras.

The building comprises of three blocks which consists of the following :

- i) Two (2) units of Service Centre,
- ii) One (1) unit of four (4) floor Car Park,
- iii) One (1) unit of TNB Substation, and
- iv) Two (2) Guard House

at Lot 1571, Jalan Perdana 1/91B, Pandan Perdana Mukim Kuala Lumpur, Daerah Kuala Lumpur.

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Representation at site, project and consultant meetings.*
- *Liaison with approving authorities.*
- *Supervision of construction.*
- *Installation, testing, commissioning and handing over.*

KPJ DAMANSARA 2 SPECIALIST HOSPITAL, SUNGAI PENCHALA



Client
Nadaputra Sdn Bhd

The project involves the construction of a 300-bed Specialist Hospital for Nadaputra Sdn Bhd to be operated by KPJ Healthcare Berhad.

Location
Sungai Penchala, Kuala Lumpur

The project consists of a 10 storey hospital building with a 5 storey sub-basement car park. The hospital will be equipped with state-of-the-art facilities which include the following:

Services
Civil & Structural
Electrical & Mechanical

Targeted Completion Date
2018

Project Value
RM 200 Million

- 7 Operation Theatres (4 Regular, 2 Modular, 1 Digital)
- 1 Catheterization Lab
- Central Sterile Services Department (CSSD)
- Coronary Care Unit (CCU)
- Intensive Care Unit (ICU)
- High Dependency Unit (HDU)
- Accident & Emergency Department (A&E)
- Imaging Department
- Endoscopy Department
- Labour & Delivery Department and Nursery
- Physiotherapy Department
- Specialist Clinics
- Day-care Centre

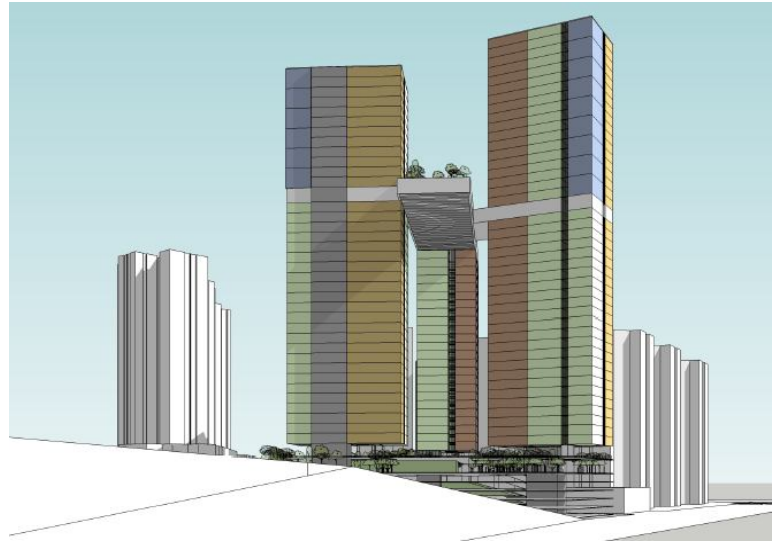
MMSB Consult was appointed as the Engineering Consultant to provide the Civil, Structural, Electrical and Mechanical services for this project.

The project is targeting a GBI Certification. Innovative design techniques will be employed to improve the building's energy efficiency such as Rain Water Harvesting, Roof-top Gardens and High-Efficiency Chillers.

The floor area of the hospital building is about 43,000 square metres.

The project will cost about RM 200 million.

SRI WANGSAMAS CONDOMINIUM, WANGSA MAJU

**Client**

Setapak Heights Development Sdn. Bhd.

Location

Wangsa Maju, Setapak

Services

Electrical & Mechanical

Targeted Completion Date

2018

Project Value

RM 300 Million

Wangsa Maju has become a hotbed for high-end residential development thanks to its convenient location close to Kuala Lumpur's CBD with hills offering clear views of the city skyline.

In line with the high demand for residential space in the area, the project involves the construction of 3 Condominium Blocks with 5 levels of Car Parks.

The development will be a model of sustainable living with large amounts of green space and being within walking distance of the Sri Rampai LRT station.

The development will contain 468 residential units. The project will consist of the following:

- *Tower 1 - 21 Storey Condominium Tower*
- *Tower 2 - 41 Storey Condominium Tower*
- *Tower 3 - 33 Storey Condominium Tower*
- *5 levels of sub-basement Car Parks*
- *Ground Floor Admin and Facilities Centre*

MMSB Consult was appointed as the Engineering Consultant to provide Electrical and Mechanical services for this project.

INTEGRATED DEVELOPMENT, 8MD3, PRECINCT 8, PUTRAJAYA



Client
Putrajaya Holdings Sdn Bhd

Location
Putrajaya

Services
Electrical & Mechanical

Completion Date
2021 - 2022

Project Value
RM 544 M

MMSB Consult was appointed as the Consultant Engineer for Electrical and Mechanical Services for the Integrated Development in Precinct 8, Putrajaya. This development complex provides a luxurious style of living within Putrajaya.

The complex occupying 9.3 acres comprises the following:

- 1 block 44 storey luxury apartment (187 units)
- 2 blocks 30 storey apartment (280 units)
- 1 block 16 storey service apartment tower (121 units)
- 3 blocks 6 storey waterfront retail and service apartment (360 units)
- 1 block 3 storey retail mall including offices
- 1 block 2 storey Event Hall
- 4 elevated car park levels
- 3 basement car park levels

MMSB's scope includes:

- Conceptual and system planning.
- Preliminary engineering and cost investigation.
- Detail engineering design and drawings.
- Documentation and specification.
- Contract and site administration.
- Liaison with approving authorities.
- Supervision of construction and installation, testing, commissioning and handing over.
- Project and consultant meetings
- Representation at site

PROPOSED RESIDENTIAL DEVELOPMENT, PLOT 17RP2, PRECINCT 17, PUTRAJAYA



Client
Putrajaya Homes Sdn Bhd

Location
Precinct 17, Putrajaya

Services
Electrical & Mechanical

Completion Date
-

Project Value
-

Precinct 17 boasts its high residential occupancy and vibrant environment which have achieved through cohesive advancement of urban massing and sustainable living.

MMSB Consult was appointed as the Consultant Engineer for Electrical & Mechanical Services for the Residential Development on Plot 17RP2 which occupies 6.79 acres of Precinct 17 in Putrajaya. Inspired by the Trillium flower, this development emulates its three petals and incorporates green design features.

This premier residential development consists of:

- 2 blocks 13 storey 81 unit apartments
- 2 blocks 13 storey 89 unit apartments
- 2 storey podium car parks and communal facilities
- Located along the waterfront

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail engineering design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Liaison with approving authorities.*
- *Supervision of construction and installation, testing, commissioning and handing over.*

CYBERSECURITY HEADQUARTERS BUILDING



Client
Ministry of Science, Technology & Innovation

Location
Cyberjaya

Services
Mechanical & Electrical
Construction Supervision

Completion Date
2017

Project Value
RM 250 Million

MMSB Consult was appointed as the consultant engineer for Electrical and Mechanical services for the CyberSecurity, Cyberjaya.

The building comprises of a two block office and a podium with total floor area of 49,430 sqft. It consists of Cybersecurity, Standard Department Malaysia, My Domain Registry and National Security Council office.

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Representation at site, project and consultant meetings.*
- *Liaison with approving authorities.*
- *Supervision of construction.*
- *Installation, testing, commissioning and handing over.*

SKYPARK TERMINAL EXTENSION, SUBANG



Client
Subang Skypark Sdn Bhd

Location
Subang

Services
Electrical & Mechanical

Completion Date
2016

Project Value
RM 150 Million

MMSB Consult Sdn Bhd was appointed as the consultant for Mechanical & Electrical services for the Proposal Expansion to Sultan Abdul Aziz Shah Airport, Subang Skypark Terminal Building, Subang, Selangor Darul Ehsan.

The project comprises of Building 1 – 2 level Terminal & Retail of gross area 31,000 m², Building 2 – 1 level Fixed Base Operation of gross area 1,600 m² and 4 storey carpark.

MMSB'S Scope includes:

- Conceptual & System Planning
- Preliminary Engineering & Cost investigation
- Detail engineering design and drawing
- Documentation & specification
- Contract & site administration
- Liaisoning with approving authorities
- Supervision of construction & installation
- Testing, commissioning & handing over.

PROPOSED RESIDENTIAL DEVELOPMENT, 280 PARK HOMES AT TAMAN PUCHONG PRIMA



Client
LEO VISTA Sdn Bhd

Location
Puchong, Selangor

Services
Electrical & Mechanical

Completion Date
2010 - 2015

Project Value
RM 100 Million

With an affluent society comes the need for more luxurious style of living, thus the growing number of apartment style of living, have been on the increase. To accommodate such a demand, 6 blocks of apartment was developed.

MMSB Consult was appointed as the Consultant Engineer for Electrical & Mechanical Services for the Apartment Development Complex at Puchong, Selangor.

The buildings consist of:

- 6 block 6 storey duplex with lift 280 units apartments
- 1 block 2 storey club house
- 1 storey podium car parks and communal facilities
- 1 level roof garden

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail engineering design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Liaison with approving authorities.*
- *Supervision of construction and installation, testing, commissioning and handing over.*

HOUSING DEVELOPMENT, ANTARA GAPI, HULU SELANGOR



Client
PKNS

MMSB was the Consultant for Civil, Structural, Electrical and Mechanical Services including the Sub-Station and Fire Fighting System for this project.

Location
Hulu Selangor

The development in Antara Gapi stretches over an area of 18 acres and comprises of 54 units of double storey semi detached houses. The semi detached houses has two layout, one of which is flat unit and the other is step up unit. The development also comprised of 3 bungalow lots and 1 TNB building.

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2015

In addition the development brought along vast landscape and infrastructure design to compliment its contemporary urban building design with green frontage.

Project Value
RM 38M

Due to the highly undulating terrain and hilly nature of the site, earthworks was extensive and the geotechnical aspect of the project was very challenging to ensure stability of high slopes with the different types of retaining walls.

The scope of work includes:

- Detailed Design for Civil and Structural, Mechanical, Electrical and Fire fighting Works
- Representative at site
- Liaison with Approving Authorities
- Documentation and Specification
- Project and Consultant Meetings
- Structural setting out details

UNIVERSITI TEKNOLOGI MARA (UiTM) RAUB, PAHANG



Client
Universiti Teknologi Mara (UiTM)

Location
Raub, Pahang

Services
Electrical & Mechanical

Completion Date
Completed Oct 2015

Project Value
RM 230 Million

MMSB Consult was appointed as the Consultant Engineer for Electrical and Mechanical Services for Universiti Teknologi Mara (UiTM) by Utusan Inteltek Sdn.Bhd under the Private Fund Initiative Contract (PFI Phase II).

The development consists of 19 buildings on the area of 30.5 acres in Raub, Daerah Kelau, Pahang.

The buildings consist of :

- Administration Block
- Academic Block 1 & 2
- Library
- Multipurpose Hall
- Pusat Pemikiran Islam / Surau
- Bangunan Penyelenggaraan & Depo Kenderaan
- Unit Kesihatan
- Unit Sukan
- Asrama Perempuan 1 & 2
- Asrama Lelaki
- Medan Selera
- Central Utility Building 1 & 2
- TNB Substation
- Pump House

MMSB's scope includes:

- Conceptual and system planning.
- Preliminary engineering and cost investigation.
- Detail engineering design and drawings.
- Documentation and specification.
- Contract and site administration.
- Liaison with approving authorities.
- Supervision of construction and installation, testing, commissioning and handing over.

COMMERCIAL AND RESIDENTIAL BUILDINGS AT LOT 108, SECTION 89, JALAN AMPANG



Client
Al-Hidayah Group

Location
Kuala Lumpur

Services
Civil & Structural

Completion Date
2015 - Ongoing

Project Value
RM 400 Million

MMSB was appointed as the Civil & Structural engineer for the Mixed Property Development Project at Jalan Ampang, Kuala Lumpur. The development is situated next to the existing Great Eastern Mall as well as office complex and opposite to the Gleneagles Intan Medical Centre. The development consisted of the construction of the following:-

- 1 block of 20 storey office tower
- 3 blocks of 20 storey condominium towers
- 1 block of 11 storey service apartment tower
- 3 levels of retail floors
- 3 basement car parks

The basement floors involved excavation of more than 10m depth and contiguous bored pile wall is proposed and since no ground anchors were allowed to be installed into the neighbouring land, top down construction was adopted. The sub-soil condition of the site comprising of undulating limestone formation was one of the key challenges that was overcome in the design.

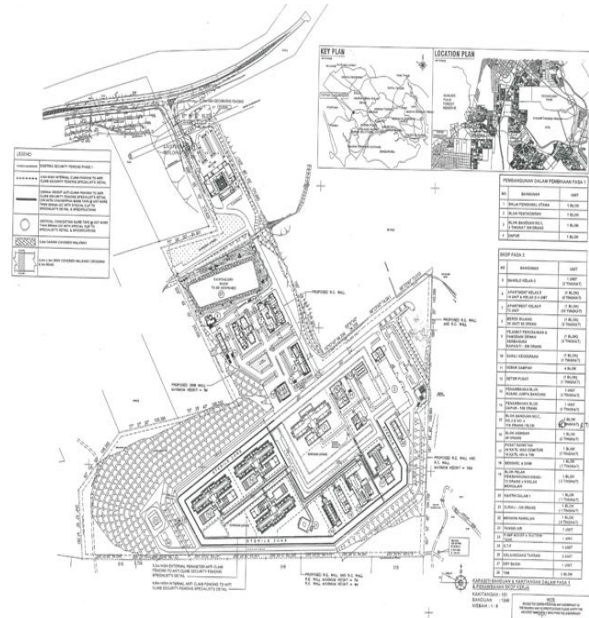
Transfer beams were required extensively as the support elements, i.e. the columns and wall for the residential blocks did not coincide with the supports at retail and basement parking floors.

The scope of services comprises of the following:-

Pre construction:

- To study the architect's conceptual design and propose corresponding design options.
- Propose the most viable and feasible structural system for the development.
- To work hand in hand with the architect and other consultants to coordinate and further plan on the conceptual design especially in relation to columns and walls location as well as the sizing of structural elements.

PENJARA REMAN TEGAR, JOHOR BHARU



Client
Kementerian Dalam Negeri Malaysia
Managed by: Jabatan Kerja Raya
- Interasegi Sdn Bhd

Location
Skudai, Johor Bharu

Services
Civil & Structural

Completion Date
2015

Project Value
RM 160 Million

MMSB Consult was appointed as the Consultant Engineer to provide Civil & Structural engineering services for this project. The project is undertaken by Kementerian Dalam Negeri Malaysia and managed by Jabatan Kerja Raya Malaysia to cope with the ever increasing importance for our national security needs. The project is a modern detention facility situated on a 30 acre site near Skudai, Johor Bharu, Johor.

The main component of the project is 2 numbers of prison blocks that can accommodate 300 inmates each, 10-storey residential apartment for staff and numerous types of rehabilitation blocks. Altogether there are 18 number of buildings structure involved.

Due to the terrained and hilly nature of the site, earthworks is enormous involving cutting and filling up of up to 25 metres of soil. Geotechnical aspect of the project is very challenging to ensure stability of high slopes and the different types of retaining walls.

MIX DEVELOPMENT PHASE 4D6, BANDAR KINRARA



Client
Perumahan Kinrara Bhd
(Subsidiary of I&P Bhd)

Location
Bandar Kinrara, Puchong, Selangor

Services
Civil & Structure

Completion Date
2015

Project Value
RM 150 Million

MMSB Consult was appointed as the Consultant Engineer to provide Civil & Structural engineering services for the project located at the residential and commercial centre of bustling Kinrara Township

This is the first mix commercial and high-rise up market residential project undertaken by the developer, Perumahan Kinrara Berhad, a subsidiary of I&P Berhad at Bandar Kinrara.

The project involve the development of :-

- 36-Storey block consisting of 27-Storey serviced apartment (236 units, 2-Storey clubhouse, 6-Storey elevated car-park and 2-Storey basement)
- 3-Storey commercial (retail) centre with 2-Storey basement and related facilities.

The structure involve the construction of transfer floor consisting of transfer beams with span of up to 12 metres to support the shear walls of the apartment floors above. Diaphragm wall is utilised for the construction of the basement.

The project is connected to the new Kinrara LRT Station by a pedestrian skywalk.

MMSB's scope includes:

- *Conceptual and system planning*
- *Preliminary engineering and cost investigation*
- *Detail engineering design and drawings*
- *Documentation and specification*
- *Contract and site administration*
- *Liaison with approving authorities*
- *Supervision of construction and installation, testing, commissioning and handing over.*

WATER FRONT, PRECINCT 8



Client
Putrajaya Holdings Sdn Bhd

Location
Putrajaya

Services
Electrical & Mechanical

Completion Date
2014

Project Value
RM 62 Million

Strategically situated across the Putrajaya Lake from the Western edge of Precinct 2 & 3, is the Precinct 8 Commercial Waterfront edge with expansive views towards the backdrop of the Government's Core Island precincts and major landmarks such as the National Millennium Monument and the Grand Putrajaya Mosque. In an embracing arc, the waterfront is the focal point of three linear parks axis in the vicinity. A ferry terminal is located at the end of the primary linear park vista and is the visual anchor to the waterfront.

Spread around a unique waterfront made of 11.2 hectares of land and water, with 0.7 kilometres of waterfront edge, it offers a unique opportunity to create a lifestyle hub and new urban design that encourages public use through a fusion of business, retail, entertainment and leisure activities. Precinct 8 waterfront presents a rare opportunity to developed cutting edge retail space with a range of office accommodation, accommodating smaller office suites units to larger office spaces, surrounded by the latest residential design and amenity.

The proposed development is consist of 4 storey 24'x70' shop offices, 2 storey 24'x70' showroom/shops, 24'x80' showroom/shops and 24'x80' showroom/shop which will be built in Parcels 8C1, 8C2, 8C5 and 8C6 in Precint 8, Putrajaya.

Scope of Electrical and Mechanical Consultancy Services includes:
Preliminary, concept and detail design, design calculations, tender drawings and documentation. Mechanical and Electrical Services and Utilities requirements for this development are as follows:

- a) Air Conditioning Services
- b) Fire Protection Services
- c) Internal Cold Water and Sanitary Services
- d) Natural Gas Services
- e) Lift Services
- f) Electrical Services
- g) Telephone Services

MASS RAPID TRANSIT (SUNGAI BULOH – KAJANG) - PACKAGE DPT2: CONSTRUCTION AND COMPLETION OF KAJANG MAINTENANCE DEPOT, EXTERNAL WORKS AND OTHER ASSOCIATED WORKS



Client
SMHB Sdn Bhd
(MMC Gamuda)

MMSB Consult was appointed to provide civil and structural consultancy services to MMC Gamuda KVMRT (PDP) Sdn Bhd, a project delivery partner for Mass Rapid Transit Corporation Sdn Bhd.

Location
Selangor, Malaysia

The proposed work involves the detailed design for civil and structural based on approved schematic layout and preliminary design.

Services
Structure

MMSB's scope includes:

Completion Date
On-going

Project Value
40M

- Overall stability and foundations for the buildings/workshop within the depot.
- Preparing detailed civil and infrastructure designs such as drainage and sewerage.
- Conventional reinforced concrete frame structural system for the typical floors and roof.
- Structural steel system for the roof structure.

NAZA KIA FLAGSHIP SHOWROOM



Client
Naza Kia Malaysia Sdn Bhd

Location
Petaling Jaya

Services
Civil & Structural
Mechanical & Electrical
Construction Supervision

Completion Date
2012

Project Value
RM 9 Million

MMSB Consult was appointed as the consultant engineer for Civil, Structural, Electrical and Mechanical services for the Naza Kia Flagship Showroom.

The building comprises of a single block of 3 floors of total floor area 8,000m². It consists of workshop, sales office, show room and administration office.

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Representation at site, project and consultant meetings.*
- *Liaison with approving authorities.*
- *Supervision of construction.*
- *Installation, testing, commissioning and handing over.*

PEUGEOT FLAGSHIP SHOWROOM



Client
Nasim Sdn Bhd

MMSB Consult was appointed as the Consultant Engineer for Civil, Structural, Electrical and Mechanical Services for the Peugeot Flagship Showroom.

Location
Glenmarie, Shah Alam

The building comprises of a single block of 3 floors of total floor area 8,500m². It consists of workshop, sales office, showroom and administration office.

Services
Civil & Structural
Mechanical & Electrical
Construction Supervision

MMSB's scope includes:

Completion Date
2012

Project Value
RM 12 Million

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detail design and drawings.*
- *Documentation and specification.*
- *Contract and site administration.*
- *Representation at site, project and consultant meetings.*
- *Liaison with approving authorities.*
- *Supervision of construction.*
- *Installation, testing, commissioning and handing over.*

LED STREET LIGHTING INSTALLATION AT MIDDLE RING ROAD (MRR2), FEDERAL HIGHWAY & SUBANG AIRPORT ROAD (SSAAS)



Client
Philips Malaysia Sdn Bhd

Location
MRR2, Federal Highway & SSAAS

Services
Civil & Structural and
Electrical

Completion Date
2012

Project Value
RM 94 Million

MMSB Consult was appointed by Philips Malaysia Sdn Bhd as Engineering Consultant for Civil, Structural and Electrical Services for the upgrading of the street lighting system along Middle Ring Road (MRR2), Federal Highway (FH) and Subang Airport Road (SSAAS) spread over 63.1km of main road.

The project, undertaken by the Ministry of Works Malaysia (Kementerian Kerja Raya Malaysia) and Public Works Department Malaysia (Jabatan Kerja Raya Malaysia), is to support the Malaysia Government's initiative to improve energy efficiency of lighting on Malaysian roads, which will result in reduction of carbon footprint in Malaysia.

The core part of the lighting upgrade includes:

- Replacement of existing conventional high pressure sodium vapour lamps (445w) with new LED (186w) road lighting luminaires.
- The lighting upgrade includes installation & commissioning of new LED luminaires, replacement of existing poles from 12m high to 10m, new power cables, replacement of existing feeder pillars with new feeder pillars and relevant accessories.

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering, site survey and cost investigation.*
- *Strip survey carried out by a licensed Land Surveyor.*
- *Conceptual engineering design, detail design and drawings.*
- *Contract and site administration.*
- *Supervision of construction and installation.*
- *Testing, commissioning and handing over.*

RESIDENTIAL DEVELOPMENTS AT ALAM DAMAI



Client
Syarikat Perumahan Pegawai Kerajaan
Sdn Bhd
(I&P Group)

Location
Alam Damai, Cheras

Services
Structural

Completion Date
2012

Project Value
RM 60 Million

MMSB Consult was appointed as the Consultant Engineer to provide structural engineering services for the Proposed Residential Developments at Alam Damai, Cheras.

This development is considered one of the last landed properties situated relatively near to the Kuala Lumpur city.

The project consists of 107 units of Super Terrace and Semi-Detached High-End Houses on a 13 acre site.

The houses consist of seven (7) types of 2, 2 ½ and 3-Storey Houses with floor areas ranging from 2,500 square feet to 6,000 square feet each. The houses are seated on different formation level due to terraneous nature of site.

The design and construction of the project were carried out in a relatively short period of 24 months.

5G2- GOVERNMENT BUILDING AT PRECINCT 5 - PUTRAJAYA



Client Putrajaya Holdings Sdn Bhd	MMSB was appointed as the Civil and Structural Engineering Consultants for the Project.
Services Civil & Structural	Government offices on Lot 5G2 (abbreviation for Precinct 5, Government Building, Parcel 2) strategically located adjacent to the Pullman Hotel, Putrajaya, consists of 2 office blocks for two government ministry:
Completion Date 2011	The Ministry of Tourism, Malaysia; and The Ministry of Higher Education, Malaysia.
Project Value RM 521 Million	The 5G2 – Government building comprises of two towers which are 19-storey high, with three levels of shared split level basement. The heights of the towers are 80.675m to highest floor and 90.731m to highest point.
End User Tower 1-Ministry of Tourism Tower 2-Ministry of High Education	The floor plan of the building is 95 m x 300m and the basement is designed as a water-tight structure without the provision of any expansion joints or contraction joints. The superstructure floors are design as post tensioned floor slab and beam framed to reinforced concrete columns.
Total Floor Area Gross Floor Area: 147,789.01 sqm	<p>The building consists of:-</p> <ul style="list-style-type: none"> • Multipurpose hall, taska, cultural axis • Exhibition area & functional rooms • Café lounge, gymnasium & library • Strong room for the ministries • Interior design to suit the end users • 1234 car park lots and 419 motorcycle parking lots <p>MMSB's scope includes:-</p> <ul style="list-style-type: none"> • Conceptual and system planning • Preliminary engineering and cost investigation • Detail design of substructure and super structure • Documentation and specification • Contract and site administration • Liaison with approving authorities • Supervision of construction of sub structure • Supervision of construction (ICE services) for super structure

SMART SCHOOL COMPLEX



Client
Azza Associates /
Putrajaya Corporation

Location
Putrajaya

Services
Civil & Structural
Electrical & Mechanical

Completion Date
Project on hold

Project Value
RM 75 Million

MMSB Consult was appointed as the consultant for Civil, Structural, Electrical and Mechanical Services for the Smart School Complex in Putrajaya, Malaysia. The complex, occupying 15 acres in Precinct 15 Putrajaya with 26% plinth area, comprises of a secondary and primary school.

The project was designed as a technologically balanced educational institution, identity as a community landmark, conducive and safe environment for teaching and learning and educational landscape that enhances learning experience. Consisting of 3 and 4 storey buildings for a secondary school of 40 classrooms and a primary school of 50 classrooms complete with facilities for handicapped students. The building comprises of administrative and academic blocks, multipurpose hall, workshops, science laboratories, computer laboratories, libraries, canteen, surau and mini stadium.

MMSB's scope includes:

- *Conceptual and system planning*
- *Preliminary engineering and cost investigation*
- *Detail engineering design and drawings*
- *Documentation and specification*
- *Contract and site administration*
- *Liaison with approving authorities*
- *Supervision of construction and installation, testing, commissioning and handing over.*

HEALTH CENTRE, BANDAR BOTANIK



Client
Ministry of Health, Malaysia

The project involved the construction of a comprehensive regional health clinic by Ministry of Health Malaysia in Bandar Botanik, Klang.

Location
Bandar Botanik, Klang, Selangor

MMSB Consult was appointed as the Engineering Consultant to provide the Civil, Structural, Electrical and Mechanical services for this project.

Services
Civil & Structural
Electrical & Mechanical

The floor area of the clinic building is about 22,500 square metres and sits on a 5 acre site.

Completion Date
2010

The building structure utilised the IBS system of hollow-core slab as requested by the project implementer, the Public Works Department of Malaysia.

Project Value
RM 40 Million

The electrical and mechanical works utilise the latest system available suitable for a hospital project.

The project cost about RM 40 million.

STRUCTURAL SURVEY FOR THE BANGUNAN SHELL MALAYSIA



Client Shell Malaysia Trading (SMT)	The Shell House is an eleven storey building with two (2) levels of car park at the 3 rd and 4 th floor and one (1) basement car park. The building is slightly more than 20 years old and therefore most probably constructed in the mid 80's and ever since occupied and utilised.
Location Damansara Heights, Kuala Lumpur	
Services Civil & Structural	A walkthrough inspection was carried out by MMSB together with representatives from the Maintenance Department of Shell Malaysia Trading (SMT) at all levels including offices, car parks, basement car park, plant rooms, cafeteria, recreation rooms and stairwells. However some of the rooms (i.e. mother's room, quiet room and server room) were inaccessible. Structural elements were also inaccessible especially in the office space as it was covered by the ceiling board and plaster ceiling. As such random checks were carried out in these areas.
Completion Date 2008	
Project Value -	<p>The major and significant defects found in the building were the corroding steel deck and heavily rusted universal steel beam. The encased steel columns and beams have shown no signs of distress. The top of slab was not inspected as it was carpeted and tiled. No signs of undulation or dislodgement of decking was observed from the underside of the slab.</p> <p>Vertical and horizontal cracks noted on the encased structural steel column appear to be either on the interface or surface crack. Vertical cracks along the intersection of the column & brick wall and brick wall & beam observed in the stairwell, roof façade and external areas as a results of shrinkage of brickwall infill relative to the structural frame. Several minor crack lines were observed in the internal partition walls namely above door openings, and cracks generated from mounted architectural fixtures.</p> <p>The defects in term of vertical hairline cracks and mould growth on the external surface and façade of the structures are visually unpleasant and require immediate repairs, to prevent penetration of moisture and growth of vegetation. Propagation of cracks on the external surfaces is more critical as they are exposed to the weather and the rate of deterioration will escalate if proper measures are not taken to address these surface blemishes.</p> <p>The loading change encountered in some areas of the floor such as machinery and M&E rooms appeared to be within the design load of the building. The fact that there were no signs of structural distress and ground subsidence around the building indicates that the building frame is intact and there should not be any major concern to the owner.</p>

COMMERCIAL OFFICE COMPLEX, LOT 3C4, PRECINCT 3, PUTRAJAYA



Client
Putrajaya Holdings Sdn Bhd

Location
Putrajaya

Services
Civil & Structural
Electrical & Mechanical and Independent
Checking Engineer

Completion Date
2008

Project Value
RM 100 Million

MMSB was appointed as the concept design and independent check consultant for Civil, Structural, Electrical and Mechanical Services for the commercial office complex in Putrajaya.

The project is a design and built type of contract. MMSB was appointed to provide a conceptual design and bid document for the design and built package, and as an independent check engineer for the client. This project was designed as Class A commercial office complex comprising of a 13 storey office and retail spaces and 2 storey basement carpark with a total gross area of 61,000m².

MMSB's scope includes:

- Conceptual and system planning.
- Preliminary engineering and cost investigation.
- Conceptual engineering design and drawings.
- Tender bid documents and specification.
- Independent check engineers.
- Contract and site administration.
- Supervision of construction and installation, testing, commissioning and handing over.

MALAYSIA MARINE & HEAVY ENGINEERING (MMHE), PASIR GUDANG



Client
MMHE Engineering

Location
Pasir Gudang, Johor

Services
Architectural
Civil & Structural
Electrical & Mechanical

Completion Date
2009

Project Value
RM 80 Million

MMSB was engaged as the Engineering Consultant to provide the Architectural, Civil, Structural, Electrical and Mechanical services for the construction of the Cutting and assembly workshop for MMHE Engineering who are a leading marine and heavy engineering solutions provider for a wide range of offshore and onshore facilities and vessels.

The proposed Cutting and Assembly Workshop is a 400m x 80m wide heavy industrial steel building. This industrial steel building will easily be the largest building in the MMHE Yard and possibly the largest Oil & Gas and Marine Engineering Workshop in Malaysia with the intention to double their steel production capacity from 48, 000 metric tons.

The 80m wide, 2-bay workshop consists of 3 sections and is designated according to the usage of the factory.

1. Cutting workshop
2. Sub assembly workshop
3. Block assembly workshop.

The cutting workshop is about 115m long and 15 m high and will be primarily used for steel cutting of plates.

This shop will be equipped with 2 numbers of 20ton magnetic overhead cranes and the floor loadings of up to 10 tons per sq.m were considered as the floor design load.

The sub assembly workshop is about 180 m long and 31m high and will be primarily used for the assembly of steel.

This shop will be equipped with 2 numbers of 40ton magnetic overhead cranes.

The block assembly workshop is about 105 m long and 40m high.

This shop will be equipped with a combination of 80 and 160ton magnetic overhead cranes.

Steel tonnage for this project was approximately 7,000 metric tons.

MMSB's scope of services includes:

- Preliminary & detailed design for Architectural, Civil, Structural, Mechanical and Electrical Services
- Preparation of specification and tender evaluation
- Supervision of construction
- Liaison with local and government authorities

COMPREHENSIVE ASSESSMENT AND REHABILITATION FOR THE PARLIAMENT HOUSE



Client
Kumpulan IKRAM Sdn Bhd

Location
Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2007

Project Value
-

The Malaysian Government has decided to engage Consulting Engineers to carry out a comprehensive and detailed assessment of the Parliament House Building Complex. In addition, significant rehabilitation of the building complex will be undertaken and together with the establishment of asset management and facilities maintenance systems.

The building was constructed in the early 1960's and has become an iconic building in the Kuala Lumpur landscape. A significant upgrade was made to the building services systems during the 1980's and the time has come for another examination of the building and its facilities to enable further service to be obtained for the next 25 years.

A major addition envisaged is the adoption of an asset management system and facilities maintenance programme to ensure that the operating costs over time provide benefits in reduced running costs.

Scope of Works and Services

- *Structural Engineering*
- *Civil Engineering*
- *Mechanical Engineering*
- *Electrical Engineering*
 - ~ *Medium Voltage System*
 - ~ *Low Voltage System*
 - ~ *Extra Low Voltage System*

Following the completion of the site audit and detailed testing of all services the results of the testing and findings; collated and presented in the form of a final report. The report comprised recommendations and costing for JKR comment and approval.

The comprehensive report format will comprise the following sections:-

- i. *Introduction to the investigation work;*
- ii. *Methodology of investigation and scope of work;*

-
- iii. Summary of tests carried out, method statements and acceptance criteria;*
 - iv. Tabulation, statistical analysis and interpretation of test results*
 - v. Summary of analysis and design verification carried out;*
 - vi. Findings and discussion on the findings;*
 - vii. Conclusion on the investigation on the state and condition of each component;*
 - viii. Proposal on further works/ actions;*
 - ix. Structure layout of Parliament House;*
 - x. Photographs showing the defects of the components;*
 - xi. Mapping of cracks and defects;*
 - xii. Details structural and design analysis.*

PAN PACIFIC SUTERA HOTEL



Client
Pembinaan OCK Sdn Bhd

MMSB Consult Sdn Bhd was appointed as the Civil and Structural engineering consultant for this hotel.

Location
Kota Kinabalu

The Pan Pacific Sutera Hotel is situated within the Sutera Harbour Resort Development. This development sits on 154ha. of reclaimed land that stretches towards the South China Sea.

Services
Civil & Structural

This 11 storey, 550 rooms five star hotel is surrounded by the sea, yacht and marina club and a 27 hole golf course.

Completion Date
1998

The hotel is made up of reinforced concrete structures tied together by columns, beams and slabs and sits on spun piled foundation system.

Project Value
RM 228 Million

The external structures including of cabana, swimming pool and pump house are also made up of reinforced concrete structures sitting on timber foundation.

MMSB's scope includes:

- *Detailed design of reinforcement concrete frame structure.*
- *Construction on reclaimed land.*
- *Design of structural steel flat roof for grand ballroom.*
- *Design of reinforced concrete structure for swimming pool.*
- *Drainage system for landscape garden, roadway, car park & building.*
- *Design of road way and car park.*
- *Liaison with local authorities.*

TEMPORARY CARGO BUILDING AT SENAI AIRPORT



Client
IJM Construction Sdn Bhd

Location
Senai Airport, Johor Bahru

Services
Civil & Structural

Completion Date
2004

Project Value
RM 10 Million

MMSB was appointed as the Consultant Engineer to provide Civil & Structural engineering services for the Proposed Temporary Cargo Building Complex at Senai Airport, Johor Bahru as part of Senai Airport Terminal Services (SATS) objectives, which was implemented and commissioned in 2004.

The Temporary Cargo Building complex comprises a Temporary Cargo Building (TCB) with annexed office, Mechanical and Electrical Building, Covered Car Park, Taxi Waiting Area Building, and Related Infrastructure Works.

The TCB was structurally conceived as a pure demountable steel frame, where only the wall and roof can be found in the final expression. Conventional column and beam structure along the perimeter that works with the diagonal struts to bring back the loads from the tensioned membrane roof. A gentle curving central truss supported at the midpoint is connected to the radiating Vierendeel trusses that float above the wall entity.

The roof system comprises of part Teflon membrane roofing at the wings and metal decking roofing at the centre.

The TCB structural roof has been "structured & constructed" for future dismantling of steel members and reinstallation at a new location for the proposed "Haj Terminal" building. The connection system proposed was bolted connections, to promote easy dismantling and unlocking of structures and for future reassembling of the Haj Terminal Building.

In short, the design concept was aimed to ensure that the building would be '*An air freight building capable of relocation and reuse as a small passenger terminal*'.

The Office complex and the car parks are made up of structural steel framed structure with reinforced concrete substructure. The M&E building and the Taxi waiting area building are conventional reinforced concrete building.

Award:

PAM Architectural Steel Award 2005 – Winner in the Industrial Category.

MMSB's scope includes:

- Preliminary and detailed design & drawing.
- Curvilinear steel structure-steel roof design and Reinforced concrete structure design.
- Infrastructure design including liaison with approving authorities.
- Project and consultants meetings.
- Supervision of construction.

SOLID WASTE TRANSFER STATION



Client
Department of Local Government
Ministry of Housing & Local
Government

Location
Taman Beringin, Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2001

Project Value
RM 168 Million

MMSB Consult was appointed as the lead Consultant by Kajima Corporation for the turnkey Solid Waste Transfer Station project to provide Detail Engineering Design for Civil, Structural, Mechanical and Electrical, Architectural, Town Planning and Construction supervision.

This station is designed to receive a capacity of 1700 tons of solid waste for 16 hours per day operation, with 270 tons per hour capacity during peak hours.

The station occupies about 12.97 acres situated on an ex-mining land and consists of the following building facilities: -

- i. 2 storey Transfer Station Building housing the main compactor system. The Building is provided with two elevated ramps.
- ii. Trailer Parking Area.
- iii. 1 storey Administration Building.
- iv. 2 incoming weighbridge and 1 outgoing weighbridge.
- v. Guard House.
- vi. Public Drop off centre.
- vii. Fuel Station.
- viii. Trailer and Tyre washing area.
- ix. Ingress and egress from the Middle Ring Road II to the site.

MMSB' scope includes:

- *Tender Bid exercise including preparation of tender drawings and Bill of Quantities.*
- *Coordination work as a lead consultant for Town Planning, Architecture, Civil & Structural and Mechanical & Electrical.*
- *Earthwork design including geotechnical solutions.*
- *Temporary Traffic Design for ingress and egress at Middle Ring Road II.*
- *Detailed Design for roadwork, signage, pavement, drainage, water supply and sewerage.*
- *Detailed Design on reinforced concrete structure to Transfer Station Building, Ramp, Weighbridges, Fuel Station, Administration Building and Guard House.*
- *Foundation to limestone condition including micropile and R.C. piles.*
- *Detailed Mechanical & Electrical Design.*
- *Liaison with Approving Authorities.*

THE MAGELLAN SUTERA HOTEL



Client
Pembinaan OCK Sdn Bhd

Location
Kota Kinabalu

Services
Civil & Structural

Completion Date
1998

Project Value
-

MMSB Consult was appointed as the Civil & Structural Engineering Consultant for this 450 rooms 5 star hotel.

The Magellan Sutera Hotel is situated within the Sutera Harbour Resort Development. This development is on a 154 ha. of reclaimed land that stretches towards the South China Sea.

The hotel comprises of :

- Block A comprises of 1 block ranging from 4 to 5 storey of reinforced concrete structure housing the guest bedrooms.
- Block B comprises of 4 blocks ranging from 4 to 5 storey of reinforced concrete frame structure housing the guest bedrooms.
- Block R comprises of 3 blocks ranging from 4 to 5 storey of reinforced concrete structure housing the guest bedrooms.
- The main block located at the centre of the development is also made of reinforced concrete structure. This 2 to 5 storey building houses the main hotel entrance, lobby, grand ball room, restaurant, function hall, disco theatre, the administrative centre and other hotel activity rooms.
- The other blocks include the nursery, health club, laundry & pump house, swimming pool.
- External car park.

MMSB's scope includes:

- *Detailed design of reinforced concrete frame structures.*
- *Construction on reclaimed land.*
- *Structural steel roof trusses for grand ballroom.*
- *Design of reinforced concrete structure for swimming pool.*
- *Drainage system for landscape garden, driveway, car park and building.*
- *Design of roadway and car park.*
- *Liaison with local authorities.*

ADMINISTRATION BUILDING, KUALA LUMPUR INTERNATIONAL AIRPORT



Client
Kuala Lumpur International Airport Bhd.

Location
Sepang

Services
Civil & Structural
Electrical & Mechanical

Completion Date
1998

Project Value
RM 80 Million

KL International Airport (KLIA), the international gateway to Malaysia is located in Sepang,. This is the first environmentally friendly airport in the Asia Pacific Region.

MMSB was the Engineering Consultant for the Civil and Structural services for the Kuala Lumpur International Airport's 'Administration Building'.

This 5 storey building with a floor area of 31,000m² houses the Malaysia Airport Berhad (MAB), Sepang and Total Airport Management System (TAMS) offices.

KLIA is a spectacular feat of construction, combining futuristic technology blending Malaysian culture with the rich tropical splendour of its natural resources.

With this aim at the background the Administration building was structurally conceived to match and integrate with the overall master plan.

The structure is of reinforced concrete type building and includes the designing of floor flat slab system.

The building is founded on pad footing and raft foundation.

The roads, surface drainage, water supply and sewerage systems are designed to local standards and requirements.

MMSB's scope includes:

- Preliminary & detailed design
- Preparation of specification and tender evaluation
- Supervision of construction
- Liaison with local and government authorities

SUNWAY COLLEGE - PHASE III



Client
Sunway City Berhad

MMSB Consult was appointed as the Engineering Consultant for the Civil, Structural, Electrical and Mechanical Services for Sunway College Phase III.

Location
Bandar Sunway

The building comprises of a single block of 7 floors including a ½ level basement with a total area of 35,000 m². It consists of academic rooms, computer labs, chemical / biology / physics labs, classrooms, drawing labs, libraries, labs, classrooms, libraries, lecture halls, offices, multipurpose hall, tutorial rooms, cafeteria, M&E plant rooms and utility rooms.

Services
Civil & Structural
Electrical & Mechanical

Completion Date
1997

The multipurpose hall located on the 4th floor was designed as a function hall and for games like badminton, basketball etc for a minimum capacity of 1000 heads. The structural floor was designed and constructed using specially designed precast prestressed concrete hollow slabs.

Project Value
RM 35 Million

MMSB's scope includes:

- *Conceptual and system planning.*
- *Preliminary engineering and cost investigation.*
- *Detailed design.*
- *Documentation & specification.*
- *Contract & site administration.*
- *Liaison with approving authorities.*
- *Supervision of construction and installation, testing, commissioning & handing over.*

ISTANA PERAK



Client
Jabatan Kerja Raya Perak

Location
Kuala Lumpur

Services
Civil & Structural

Completion Date
1997

Project Value

MMSB Consult was appointed as the Consulting Engineer by Public Works Department, Perak, to provide Civil and Structural services for the above project. The two storey palace for the Sultan of Perak is located at the top of the Federal Hill in Kuala Lumpur.

The building consists of the main palace extending from the existing reception hall, gazebo, servant quarters, pump house and guard house. The buildings are of reinforced concrete frame structure with timber roof system. The active structure sits on a pad footing foundation system.

MMSB's scope includes:

- *Detailed design for JKR Perak*
- *Reinforced concrete frame structure design*
- *Timber roof system*
- *Gazebo design*
- *Anchor retaining wall design*
- *Plumbing system design*

BOTTLING PLANT PROJECT



Client Kris Mineral Water Sdn Bhd	MMSB Consult Sdn Bhd was appointed the Consultant Engineer for Electrical and Mechanical services for the Mineral Water Bottling Plant.
Location Kedah	The building consists of a 2 storey office attached to a single storey bottling plant with a total built up area of 3000 m ² .
Services Electrical & Mechanical	The plant is involved in the extraction of mineral water from a 100 m well, treatment of the water, automatic manufacturing and bottling for local consumption and export.
Completion Date 1997	MMSB's scope includes:
Project Value -	<ul style="list-style-type: none">• <i>Conceptual and System Planning</i>• <i>Preliminary Engineering and Cost Investigation</i>• <i>Detailed Design & Drawings</i>• <i>Documentation & Specification</i>• <i>Contract & Site Administration</i>• <i>Representation at Site</i>• <i>Project and Consultant Meetings</i>• <i>Liaison with Approving Authorities</i>• <i>Supervision of Construction</i>

DEVELOPMENT OF FACTORY AND HOUSES FOR THE CHEMICAL MANUFACTURING PLANT



Client MMSB Consult was appointed Consultant Engineers for the Electrical and Mechanical services for the Chemical Manufacturing Plant.

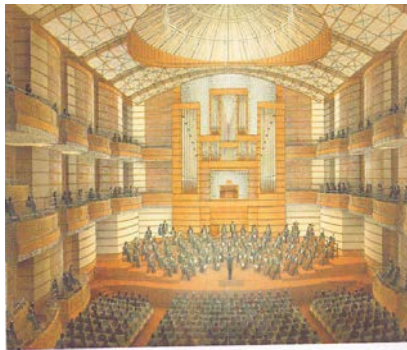
Location The building consists of a 3 storey office and a single storey manufacturing plant with a total built up area of 3200 m².
Shah Alam

Services The plant is involved in the manufacturing and processing of various types of chemical for local consumption and for export.
Electrical & Mechanical

Completion Date MMSB's scope includes:
1996

- Project Value** -
- Detailed Design & Drawings
 - Documentation & Specification
 - Contract & Site Administration
 - Representation at site
 - Project and Consultant Meetings
 - Liaison with Approving Authorities
 - Supervision of Construction and Installation

TOWER LINK / CONCERT HALL, KUALA LUMPUR CITY CENTRE



Client
Comisa

This unique building is situated in between the famous Petronas Twin Tower in Kuala Lumpur City Centre.

Location
Kuala Lumpur

The structure is basically a reinforced concrete frame system. The detailed construction shop drawings are based on the ACI standards consisting of flat slab system, transfer girder beams of 1.2m x 4.2m depth of grade 80 concrete.

Services
Structural Engineering

MMSB's scope includes:

Completion Date
1996

- *Detailed construction shop drawings for contractor*
- *Liaison with consultant in New York*

Project Value
RM 25 Million

MMSB Consult was appointed as an Independent Engineer for the review of detailed construction shop drawing for the Towers Link / Concert Hall, Kuala Lumpur City Centre.

The structure is basically reinforced concrete frame system. The detailed construction shop drawings are based on the ACI standards consisting of flat slab system, transfer girder beams of 1.2m x 4.2m depth of grade 80 concrete.

MIXED DEVELOPMENT AT BUKIT MAS, TAMAN MELAWATI (PHASE 1B)



Client
M K Associates Sdn Bhd

Location
Kuala Lumpur

Services
Civil & Structural
Electrical & Mechanical

Completion Date
1995

Project Value
-

MMSB Consult was the Consultant for Civil, Structural, Electrical and Mechanical Services including the Sub-Station and Fire Fighting System for this project.

The Project stretching over an area of 18 acres consists of :

- 1 unit of 2 storey office
- 1 unit of 3 storey bungalow
- 1 unit of 3 storey club house
- 90 units of medium cost apartments

The scope of work includes:

- *Detailed Design for Mechanical and Electrical Works*
- *Representative at site*
- *Liaison with Approving Authorities*
- *Documentation and Specification*
- *Significant services diversions*
- *Project and Consultant Meetings*
- *Structural setting out details*

AMPANG POINT SHOPPING COMPLEX



Client
Nadin Holding Sdn. Bhd

Location
Kuala Lumpur

Services
Civil & Structural,
Electrical & Mechanical

Completion Date
1995

Project Value
RM 40 Million

MMSB Consult was appointed as the consultant engineer for the Civil, Structural, Electrical and Mechanical services for the Ampang Point Shopping Complex.

The building comprises of a single block of 4 floors plus a basement of total area 40,000m². It consists of 1 anchor tenant, store / supermarket, 120 retail units made up of fast food outlets, restaurants, speciality shops, general shops etc.

MMSB's scope includes:

- *Conceptual and system planning*
- *Preliminary engineering and cost investigation*
- *Detailed design and drawings*
- *Documentation and specification*
- *Contract and site administration*
- *Representation at site, project and consultant meetings*
- *Liaison with approving authorities*
- *Supervision of construction*
- *Installation, testing, commissioning and handing over*

5.0 Project Profile

Marine

PORT OF TANJUNG PELEPAS



Client
Pelabuhan Tanjung Pelepas
Sdn Bhd

Location
Johor

Services
Civil & Structural
Electrical & Mechanical

Completion Date
2008

Project Value
Approx. RM 300 Million

PELABUHAN TANJUNG PELEPAS (PTP) is the fastest growing trans shipment hub in the world with more than 6 million T.E.U per year. It is linked directly to the second Malaysia-Singapore Expressway and the North-South Highway and well connected to air and rail system.

In conjunction with the business growth development of PTP, MMSB Consult was commissioned to provide engineering consultancy services for the detailed survey, engineering design and supervision of wharves, Berth 13 & 14. MMSB Consult's key role is design optimisation compared to PTP's existing design of Berth 1-12 which enhances in the aspects of design and construction works as well as providing potential cost savings to PTP.

MMSB's scope includes detail design of:

- *Wharf foundations; deck; crane rail beams.*
- *Crane cable slots and plug-in pits; Pin down areas; Surface water drainage.*
- *Bollards/fenders/quay furniture.*
- *Back of wharf works - a transition area between wharf deck and terminal yard of approx. 50m width consist of the followings:*
 - *Pavement roadwork*
 - *Drainage system*
 - *Encased electrical and telephone ducting*
 - *Vessel, domestic and hydrant water supply system*
 - *High mast, sub-station and wharf office building including Electrical and Mechanical services; External electrical and telephone cabling works*
 - *Cable drum to cable turnover pit (CTOP) including junction box*
 - *Scada system*

PORT OF TANJUNG PELEPAS



Client
Pelabuhan Tanjung Pelepas
APM Terminals

The Port of Tanjung Pelepas commissioned MMSB Consult to lead the review of the PTP Master-Plan. The study included analysis of optimum terminal operating systems and port layout options to best serve future requirements.

Location
Johor

Extensive Hydraulic modelling was prepared to compare potential design options. Water quality and tidal issues were assessed for recommended development options. A complete environmental analysis was presented depicting impacts, constraints and recommendation for development.

Services
Master Planning
Operating Systems
Hydraulic Analysis
Environmental Planning
Simulation Development Scheduling

MMSB Consult reviewed simulations of terminal operations with alternative yard operating systems to establish maximum potential berth and container yard operating capabilities. Traffic modelling with micro-simulation was made to assess proposed traffic management schemes for future development of the port and terminal in-gate designs.

Completion Date
2008

The analysis has provided PTP the opportunity to expand operating capacity to meet expected future growth from 5.7m to 36m TEUs/pa and maintain flexibility for future development options.

Project Value
RM 2.42 Million

KUANTAN PORT



Client
Road Builders (M) Sdn. Bhd.

This turnkey contract was awarded to Road Builders (M) Sdn Bhd by Kuantan Port Authority.

Location
Kuantan

Services
Structural

Completion Date
1998

MMSB Consult was appointed by Road Builders (M) Sdn Bhd as the Structural Design Consultant for a new Liquid Chemical Berth located next to an existing oil jetty within the port to handle the increasing import / export of the liquid chemical. This multi-user and multi-product facility berth, about 50.2 m long by 20 m wide, incorporates berthing and mooring dolphins and is capable of accommodating service tankers of up to 40,000 DWT. The berth is linked by a 45m long approach trestle.

Project Value
RM 13 Million

The berth consists of two platforms; a main deck for hose operation and operator service and a 28 m x 9.5 m elevated platform for loading arms and crane operation.

The structural system consists of cast-in-situ R.C. beams spaced at 6.0 m c/c transversally and about 5.7 m longitudinally.

The deck consists of precast deck panels with cast-in-situ slab topping. Due to the high up stand of pile, at about 16.9 m at the berthing end, tubular steel pipes of 800 mm and 600 mm diameters were designed to support the berth - approach trestle structures.

The structural system of the approach trestle consists of cast-in-situ pile bents supporting precast M-beams which in turn support an in-situ roadway slab on one side and a 4.5 m wide service pipe rack on other. The berth tendering system is supplemented by the introduction of berthing and mooring dolphins located on each end of the berth.

MMSB's scope includes:

- *Preparation of tender documents for soil investigation and survey works.*
- *Preliminary and detailed structural design.*
- *Study of wind and wave climate.*
- *Navigational study for track plot, stopping distance, motion at berth and mooring load.*
- *Assessment of bollard and fender loads.*
- *Design of shore abutment and elevated platform.*
- *Technical specifications.*
- *Technical support during construction.*

TELOK BURAU RESORT



Client
Sato Kogyo, Kuala Lumpur

Location
Langkawi Island

Services
Civil & Structural
Electrical & Mechanical

Completion Date
1990

Project Value
-

The Telok Burau Resort is a project programmed to attract, accommodate and profitably maintain a substantial percentage of the tourism market visiting the island of Langkawi. The project consists of four main developments:

- A 300 room hotel with amenities such as fresh and salt water swimming, deluxe as well as informal dining, curiosity shopping, boating, excellent beaches, exercise centre, spa facilities, hair dressing saloons and complete travel desks, as well as banquet and exhibition facilities.
- An international standard resort golf course and clubhouse including other sporting facilities with unsurpassed surroundings and outlook.
- The Marina, taking full use of the Langkawi group of islands making it a paradise for sailing, fishing and scuba diving – facilities rarely available in the Asian region.
- Display of restored elements of Malaysian villages, as a theme throughout the development.

MMSB's scope includes:

- *Wave hind casting*
- *Breakwater design*
- *Marina layout*

-
- *Comment on the feasibility of project scheduling and the estimated cost in collaboration with the other consultants.*
 - *Proceed with detail design for tender and construction.*

During construction

- *Provide technical support such as responding to queries, clarification to drawings and coordination with other consultants.*
- *Construction monitoring for general compliance with the design, specification and procedures and mythology of construction.*
- *Review and certify all documentary submission by the contractor.*
- *Certify completion of civil and structural works.*
- *Monitor defects work.*

5.0 Project Profile

Dam

DON SAHONG HYDROPOWER PROJECT



Client Mega First Corporation Bhd
MMSB Consult was appointed to carry out detailed engineering design services for Civil and Structural Works.

Location Laos
The Proposed works involves widening and upgrading of existing and new road including beam slab bridge of length 350m leading to new Project site.

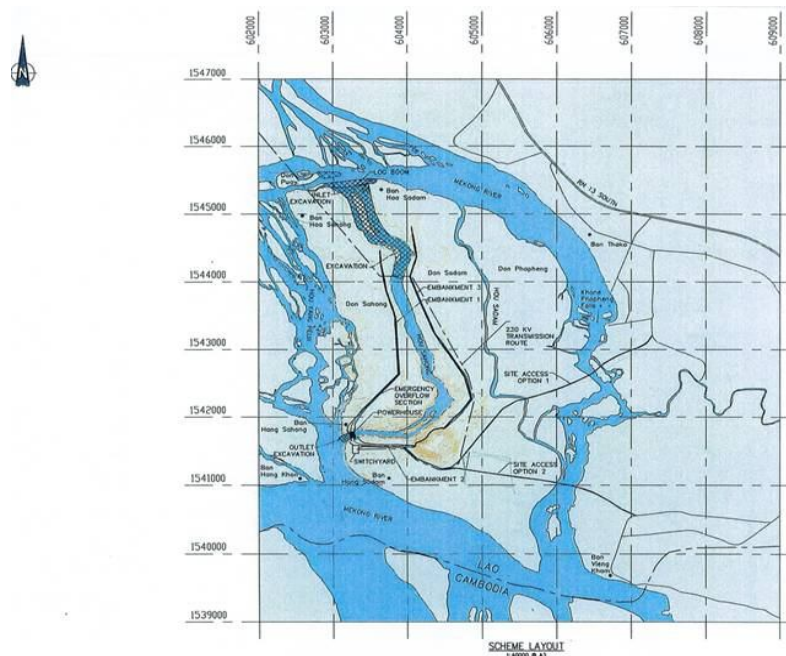
Services Civil & Structural
MMSB's scope includes:

- Completion Date** 2012
- Overall design review
 - Fast track detail engineering design
 - Issuance of construction drawing
- Project Value** RM 20 million

Various detail design works carried out by MMSB includes:

- Geometrical design modifications where necessary
- Detailed Design of Access Bridge over river
- Retaining wall design at either end of bridge
- Preparation of detailed road signage and road marking drawings

DON SAHONG HYDROPOWER PROJECT



Client
Mega First Corporation Bhd

Location
Laos

Services
Study – Technical Review

Completion Date
2010

In March 2006, Mega First Corporation Berhad signed an agreement with the Government of Lao PDR (GOL) to conduct an 18 months feasibility study for the Don Sahong hydropower project in Lao PDR. The feasibility study was completed in October 2007.

In February 2008, Mega First signed a Project Development Agreement with GOL giving Mega First 18 months to develop the schema/project to point where construction can begin.

In March 2008 Mega First appointed MMSB Consult to carry out a Detailed Technical review and Project Delivery Plan for the said project. The work encompasses review of the technical aspects of the project and preparation of a project delivery plan/program.

The Project Delivery Plan includes:

- Detailing its technical characteristics, costs and energy outputs.
- Project development process.
- Project financing options.
- Procurement plan providing contracting strategies overview of the risks and the project and how much are allocated among the parties. Scopes for addition investigations, survey etc to complement the previous feasibility study.

THERMAL OXIDATION PLANT KUALA LUMPUR



Project has been deferred by DBKL

Client
Department of Local Government
Ministry of Housing & Local
Government

MMSB Consult was appointed as the Consultant by Chain Cycle Sdn Bhd for the turnkey Thermal Oxidation Plant project to provide Detailed Engineering Design for the Electrical and Mechanical services inclusive of construction supervision.

Location
Kuala Lumpur

This plant is designed to receive a capacity of 50 tons of municipal solid waste for 8 hours per day operation.

Services
Electrical & Mechanical

The plant occupies about 4 acres and consists of the following building facilities:-

Completion Date
2002

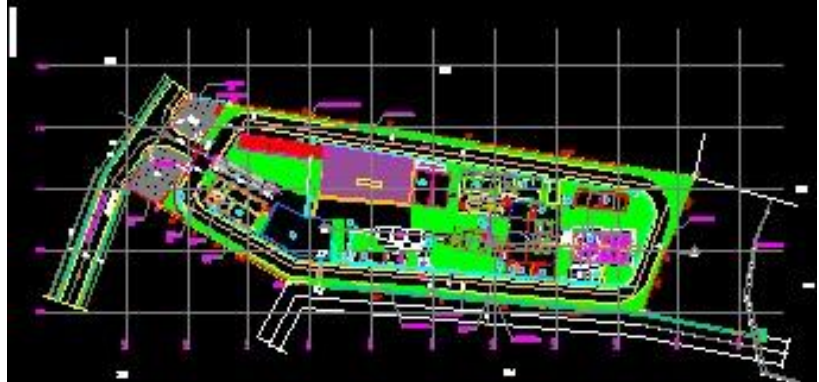
Project Value
RM 25 Million

- i. 3 Storey Plant Building Housing the Compactor System.
- ii. Trunk Parking Area
- iii. 2 Storey Administration Building
- iv. 1 Incoming Outgoing Weighbridge
- v. Guard House
- vi. Trunk Washing Area
- vii. Ash Collection Centre

MMSB's scope includes:

- *Tender bid exercise including preparation of tender drawings and bill of quantities.*
- *Coordination work with consultant for town planning, architecture, civil and structural.*
- *Detailed electrical & mechanical design.*
- *Liaison with approving authorities.*

6.5MW SMALL RENEWABLE ENERGY BIO-MASS POWER PLANT PORT DICKSON



Client
RE Power SPV Sdn Bhd

Location
Port Dickson, Negeri Sembilan

Services
Civil & Structural
Electrical & Mechanical
Independent Checking Engineer

Completion Date
2005-2011

Project Value
RM 40 Million

Maunsell Malaysia was engaged as an Independent Checking Engineer by RE Power SPV to evaluate the Full Turnkey Contractor (FTC) technical proposal. This report represents the preliminary study on the technical feasibility of the 6.5MW power plant.

The objective of the study is to evaluate the following:

- i. The facility is able to generate the capacity of 6.5MW of energy taking into account of the losses.
- ii. The 5MW generated power can be exported to TNB local grid and stable in its operation.
- iii. The biomass fuel required for its generation is sufficient.
- iv. The proposed major equipment is within its design capacities to generate the required power.
- v. The site condition is sufficient to house the entire plant and constructable.
- vi. To review the Consulting Engineer's Design related to Civil, Structural, Electrical and Mechanical.

THERMAL OXIDATION PLANT LABUAN



Client
Department of Local Government
Ministry of Housing & Local
Government

MMSB Consult was appointed as the Consultant by Chain Cycle Sdn Bhd for the turnkey Thermal Oxidation Plant project to provide Detailed Engineering Design for the Electrical and Mechanical services inclusive of construction supervision.

Location
Labuan

This plant is designed to receive a capacity of 40 tons of municipal solid waste for 8 hours per day operation.

Services
Electrical & Mechanical

The plant occupies about 4 acres situated on a reclaim land and consists of the following building facilities:-

Completion Date
2002

- viii. 3 Storey Plant Building Housing the Compactor System.
- ix. Trunk Parking Area
- x. 2 Storey Administration Building
- xi. 1 Incoming Outgoing Weighbridge
- xii. Guard House
- xiii. Trunk Washing Area

Project Value
RM 25 Million

MMSB's scope includes:

- *Tender bid exercise including preparation of tender drawings and bill of quantities.*
- *Coordination work with consultant for town planning, architecture, civil and structural.*
- *Detailed electrical & mechanical design.*
- *Liaison with approving authorities.*

6.0 List of Completed & Current Projects

MMSB CONSULT SDN BHD
LIST OF COMPLETED PROJECTS

INFRASTRUCTURE - HIGHWAY & BRIDGES

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
1	Lebuhraya Borneo Utara - Design Management & Construction Management Services, Independent Design Checking Services	Sarawak	C&S, M&E, Geotechnical	Lebuhraya Borneo Utara Sdn Bhd Unit 19-01 & 19-02, Level 19, No. 9, Jalan Bukit Mata, 93100 Kuching, Sarawak Tel: +608 2422 912	16.5B	2015	2020
2	Directional Ramps from North South Highway to Southville City	Selangor	C&S	Acre Works Sdn Bhd M-3-10 Plaza Damas No.60, Jalan Sri Hartamas 50480 Kuala Lumpur Tel: +603 6203 3819	70M	2014	2018
3	Cadangan Pembinaan Semula Jambatan dan Kerja-kerja Pembaikan, Persimpangan Bertingkat Jenis Cloverleaf di KM2.2 Lebuhraya Sambungan Putrajaya dan Kerja-kerja Yang Berkaitan ke Selangor Science Park 2, Bukit Baja, Mukim Dengkil, Daerah Sepang, Selangor	Selangor	Civil	Acre Works Sdn Bhd M-3-10 Plaza Damas No.60, Jalan Sri Hartamas 50480 Kuala Lumpur Tel: +603 6203 3819	15M	2016	2017
4	Commercial Development on Lot 480726, Proposed Elevated U-Turn and Junction Modification at Cheras Roundabout, Jalan Cheras, Mukim Kuala Lumpur	Kuala Lumpur	C&S & Electrical	Ekovest Construction Sdn Bhd 33-35, 3rd Floor, Wisma Ekovest, Jalan Desa Gombak 6, Taman Sri Setapak, 53000 Kuala Lumpur Tel: +603 4021 5948	32M	2015	2018
5	Construction of Federal Route (R67) from Sg Petani to Tawar, Baling District, 14.1 (Pakej 1) from Eastern Junction to Junction Road K620	Kedah	C&S, M&E, Geotechnical	Public Works Department Cawangan Kejuruteraan Jalan, Ibu Pejabat JKR Malaysia, Tingkat 26, Menara PJD, No 50, Jalan Tun Razak, 50400 Kuala Lumpur	77M	2014	2017
6	Proposed Toll Lane Extension at Shah Alam Toll Plaza, Phase 2	Selangor	C&S, M&E	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	7M	2014	9/7/2015
7	Proposed Construction and Completion of Common Infrastructure Works at Kwasa Damansara Township Development in Sungai Buloh, Selangor	Selangor	Independing Checking of Geotechnical & Structural	Kwasa Land Sdn Bhd Lot 116, Jalan Hevea, RRIM 40160 Sungai Buloh, Selangor	295K	2013	2017
8	DUKE Expressway Phase 2 - Tun Razak Link	Kuala Lumpur	C&S, Geotechnical	Ekovest Construction Sdn Bhd 33-35, 3rd Floor, Wisma Ekovest, Jalan Desa Gombak 6, Taman Sri Setapak, 53000 Kuala Lumpur Tel: +603 4021 5948	500M	2013	2017
9	Construction of The Elevated U-Turn at KM3.75 Lebu Raya Shah Alam	Shah Alam	C&S, M&E, Geotechnical	KESAS Sdn Bhd Wisma KESAS, No. 1 Lebu Raya Shah Alam, 47500 Subang Jaya, Selangor Tel: +603 8025 0808	23.7M	2012	23/3/2014
10	Terminal Approach Road (Package LF05B) of New LCC Terminal At KL International Airport, Sepang, Selangor	Selangor	Structural	Acre Works Sdn Bhd M-3-10 Plaza Damas No.60, Jalan Sri Hartamas 50480 Kuala Lumpur Tel: +603 6203 3819	25M	2012	2013

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
11	North-South Expressway - Pavement Structural Overlay Works from KM172 to KM169 of Southbound, Section S2	Perak	Civil	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	15M	2012	2013
12	M9 - Karachi - Hyderabad Motorway	Karachi - Hyderabad, Pakistan	C&S	Bina Puri Construction Sdn Bhd Wisma Bina Puri, 1st Floor 88, Jalan Bukit Idaman 8/1 Bukit Idaman 68100 Selangor	450M	2012	Completed until preliminary design. [Project terminated by NHA Pakistan]
13	Ramp Widening from Shah Alam Toll Plaza to ELITE, Phase 1	Selangor	Electrical	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	7M	2012	2014
14	Upgrading Pasir Gudang Highway to 6 Lanes	Johor	C&S, M&E, Geotechnical	Public Works Department Cawangan Kejuruteraan Jalan, Ibu Pejabat JKR Malaysia, Tingkat 26, Menara PJD, No 50, Jalan Tun Razak, 50400 Kuala Lumpur	148M	2011	31/5/2016
15	Pavement Rehabilitation and Associated Works - Section N4 & Section C1, North South Expressway	Perak	Civil	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	34M	2011	2012
16	Professional Engineer for the Proposed Street Lighting and Associated Works along MRR2 Kuala Lumpur and Federal Highway, Selangor Darul Ehsan	Kuala Lumpur & Selangor	C&S, M&E	Philips Malaysia Sdn Bhd Level 8 & 9, Menara Axis, No 2, Jalan 51A/223 46100 Petaling Jaya	94M	2011	2013
17	Don Sahong Hydropower Project, Lao PDR - Provision of Consultancy Services as Owner's Engineer (Enabling Work Stage 2)	Laos	C&S	Mega First Corporation Berhad A-12-01 Level 12, Block A, PJ8 No.23, Jalan Barat, Seksyen 8 46050 Petaling Jaya, Selangor Darul Ehsan	21M	2011	2012
18	Penang Second Bridge - Package 3A - Redesign of Piles for Mainline Piers	Bayan Lepas, Penang	C&S	Jambatan Kedua Sdn Bhd Tingkat 4, Bangunan Setia 1, 15, Lorong Dungun Bukit Damansara 50490 Kuala Lumpur	26M	2011	2011
19	Don Sahong Access Bridge Redesign, Laos [temporary bridge]	Laos	C&S, M&E	Mega First Corporation Berhad A-12-01 Level 12, Block A, PJ8 No.23, Jalan Barat, Seksyen 8, 46050 Petaling Jaya, Selangor	-	2011	2011 (8 mths)
20	Palm Oil Industrial Cluster (POIC) at Kuantan Port City	Pahang	C&S, M&E, Town Planning, Quantity Surveying, Landscape Architecture, Environment, Traffic, Land Surveying	East Coast Economic Region Development Council (ECERDC) Level 69, Tower 2, Petronas Twin Towers, 50088 Kuala Lumpur	80M	2010	11/11/2013
21	North-South Expressway – Pavement Structural Overlay Works from KM185.0 to KM 189.30 (SB), KM 319.10 to KM 315.0 (NB), KM 297.0 to KM 293.27 (NB). Section C1	Perak	C&S	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	35M	2010	2011
22	Penang Second Bridge Seismic Analysis	Bayan Lepas, Penang	Structural	PJS Consultants Sdn Bhd Unit 302, Blok C, Phileo Damansara 1, No 9, Jalan 16/11, Off Jalan Damansara 46350 Petaling Jaya	88M	2010	2013
23	Subang - Kelana Link Fire Damage Assessment	Selangor	Structural	Ahmad Zaki Resources Bhd No.88 Jalan Gombak, Setapak, 53000 Kuala Lumpur	3M	2010	2012

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
24	Istana Ramps at Jalan Duta	Kuala Lumpur	C&S	Ahmad Zaki Sdn Bhd No.88, Jalan Gombak, Setapak <u>53000 Kuala Lumpur</u>	106M	2009	2011
25	North-South Expressway – Pavement Structural Overlay Works from KM214.5 to KM 293.27 to KM 290.25 (NB), KM289.0 to KM 291.0 (SB), KM 296.0 to KM 299.41 (SB) & KM315.04 to KM319.00 (SB) of <u>Section C1</u>	Perak	C&S	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru Lembah Klang, 47301 Petaling Jaya, Selangor	24M	2009	2011
26	Improvement and Maintenance of IT Corridor in Chennai	Chennai, India	C&S, Electrical	TDM Infrastructure Private Limited India	80M	2009	2009
27	Penang Second Crossing (P2B)	Penang	C&S	China Harbour Engineering Co.Limited Second Penang Bridge Project Management (Di Sebelah PMU, TNB Batu Maung) <u>Lebuhraya Bayan Lepas, Pulau Pinang</u>	2.2B	2008	2014
28	Kuala Lumpur - Kuala Selangor Expressway	Selangor	Independent Checking Engineer	KL-Kuala Selangor Expressway Bhd No.9A, BRP 6/12, Bukit Rahman Putra, <u>47000 Sungai Buluh, Selangor</u>	958M	2008	2011
29	Upgrading of Jalan Tampoi to 4 Lanes	Johor	C&S	Syarikat Ismail Ibrahim Sdn Bhd No.A-02-09, Tingkat 1, Block A, Pusat Perdagangan Puchong Prima, Jalan Prima 5/5, <u>Taman Puchong Prima, 47100 Puchong, Selangor</u>	35.65M	2008	2011
30	Pavement Rehabilitation & Associated Works - Jelapang To Kuala Kangsar, Section N5 - North South Expressway	Perak	Civil	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru <u>Lembah Klang, 47301 Petaling Jaya, Selangor</u>	10M	2008	2008
31	Pavement Rehabilitation & Associated Works - Yong Peng Selatan to Pagoh, Section S3 - North South Expressway	Johor	Civil	PLUS Expressway Berhad Menara Korporat, Persada PLUS, KM 15, Lebuhraya Baru <u>Lembah Klang, 47301 Petaling Jaya, Selangor</u>	4.6M	2008	2008
32	Lebuhraya Kajang Seremban (LEKAS)	Selangor & Negeri Sembilan	Independent Checking Engineer for Lenders	Lebuhraya Kajang Seremban Sdn Bhd 2nd Floor, Wisma IJM, Jalan Yong Shook Lin, <u>46050 Petaling Jaya</u>	766M	2007	2010
33	Penang Bridge Widening - Beam Optimisation	Penang	C&S	Acre Works Sdn Bhd M-3-10 Plaza Damas No.60, Jalan Sri Hartamas 50480 Kuala Lumpur Tel: +603 6203 3819	-	2007	2009
34	Remedial Works to Slope Failure at Lot 36229, Taman Johor <u>Jaya Ground Reservoir, Plentong</u>	Johor Bahru, Johor	Geotechnical	SAJ Holding Sdn Bhd	-	2007	2007 [12 mths]
35	Remedial Works to Slope Failure at Lot 11930, Taman Ungku Tun Aminah Ground Reservoir, Skudai	Johor Bahru, Johor	Geotechnical	Azyan RepSYS Sdn Bhd No.14A, Jalan SS 20/10, Damansara Kim, <u>47400 Petaling Jaya</u>	-	2007	2007 [12 mths]
36	North - South Bypass Tunnel (NSBT) Design Lot 3480 BR 05 - Pedestrian Overpass	Brisbane, Australia	C&S, M&E	Maunsell / Parsons Brinkerhoff Design Joint Ventre, Australia North South Bypass Tunnel 140 Melbourne Street, South Brisbane QLD 4101, South Brisbane QLD 4101, Australia	2.5B	2007	2007
37	Colombo-Katunayake Expressway (CKE)	Colombo, Sri Lanka	C&S, M&E	Vinci Construction - Macrowork JV Suite 7.03 7th Floor, Kenanga International, Jalan Sultan Ismail, 50250 <u>Kuala Lumpur</u>	210M	2006	2008

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
38	North South Expressway - Third Lane Widening between Tanjung Malim and Slim River (Package 4)	Tanjung Malim, Perak	Civil & Structural	Projek Lebuhraya Utara-Selatan Bhd (PLUS) 12-17th Floor, Menara 1, Faber Towers, Jalan Desa, Bahagia Taman Desa Off Jalan Kelang Lama, 58100 Kuala Lumpur	150M	2005	2007
39	Highway Project Connecting Jalan Kewajipan in Subang Jaya to FHR2, NKVE and LDP (Subang - Kelana Link).	Subang Jaya, Selangor	C&S, M&E	Ahmad Zaki Sdn Bhd No.88, Jalan Gombak, Setapak, 53000 Kuala Lumpur	315M	2004	2009
40	Duta - Ulu Kelang Expressway Project (DUKE)	Kuala Lumpur	C&S, M&E	Ekovest Construction Sdn Bhd 33-35, 3rd Floor, Wisma Ekovest, Jalan Desa Gombak 6, Taman Sri Setapak, 53000 Kuala Lumpur	166M	2004	2009
41	Proposed Upgrading Of Pasir Gudang Highway, Johor Bahru	Pasir Gudang, Johor	C&S, M&E, Geotechnical	Setia Precast Sdn Bhd 8-1, Jalan Bandar 3, Pusat Bandar Puchong, 47100 Puchong, Selangor	180M	2004	2006
42	North South Expressway - Kuala Lumpur - Penang Through Traffic Ipoh(s) to Jelapang	Ipoh, Perak	Structural Design	HSS Integrated Sdn Bhd B1 (1-4) Block B, Plaza Dwitasik, No.21 Jalan 5/106, Bandar Sri Permaisuri, 56000 Kuala Lumpur	240M	2003	2007
43	Upgrading of Federal Route 76, Lenggong to Sauk (Package 2)	Lenggong, Perak	C&S, M&E	Sigma Consortium No.6, Persiaran Rapat Baru 20, Taman Song Choon, 31350 Ipoh, Perak	235M	2003	2005
44	Upgrading of the Road Infrastructure along Jalan Duta, Jalan Kuching and other related roads, Kuala Lumpur	Kuala Lumpur	C&S, M&E	Ahmad Zaki Sdn Bhd No.88, Jalan Gombak, Setapak, 53000 Kuala Lumpur	158M	2002	2007
45	Bridge Over Sg. Kenipir, Ranau	Ranau, Sabah	C&S, M&E	JKR / Ministry of Works, Malaysia	6.8M	2002	2003
46	Upgrading of Bridge at Jalan Sultan Azlan Shah / Jalan Aziz Ibrahim (Penang Flyover)	Penang	C&S, M&E	Seri Meraga Construction Sdn Bhd No.18, 2nd & 3rd Floor, Jalan Setiawangsa 10, Taman Setiawangsa, 54200 Kuala Lumpur	210M	2001	2005
47	Primary Distributors Road U4	Putrajaya	C&S, M&E	IJM Corporation Bhd Wisma IJM, Jalan Yong Shook Lin, 46050 Petaling Jaya, Selangor	150M	2000	2004
48	Cyberjaya Dual Carriageway	Cyberjaya	C&S, M&E	Cyberview Sdn Bhd	120M	2000	2004
49	Consultancy Services for the Design & Construction of the Bridge Packages BR1 & BR4 for Putrajaya Development	Putrajaya	C&S, M&E	Putrajaya Holdings Sdn Bhd Project Management 1 Dept Commercial Development Division Putrajaya Holdings S/B Level 5, Block 1, Menara PIH, Precinct 2, 62100 Putrajaya	55M	2000	2002
50	Middle Ring Road II - Package II (Missing Link)	Kuala Lumpur	C&S, M&E	Sukmim-Bumihiway (M) Sdn Bhd Plaza Hamodal 2nd Floor, No.15, Jalan 13/2, Off Jalan Bersatu, Seksyen 13, 46200 Petaling Jaya	238M	1999	2002
51	Feasibility Study for Seremban - Kemayan Road	Negeri Sembilan & Pahang	Feasibility Study	Highway Planning Unit, Malaysia	1.3M	1999	2001
52	Improvement of Roads Serving Matrade (Ministry of International Trade) Building and Wilayah Mosque	Kuala Lumpur	C&S, M&E	Johawaki-Ahmad Zaki Joint Venture	19M	1999	2000
53	New Pantai Highway	Subang Jaya - Pantai - Kuala Lumpur	C&S, M&E	Road Builders (M) Sdn Bhd No.71 (B&C) Jalan Petaling Utama 7 Off Batu 7, Jalan Kelang Lama 46000 Petaling Jaya, Selangor	580M	1997	2004
54	Ampang Kuala Lumpur Elevated Highway (AKLEH)	Kuala Lumpur	C&S, M&E	Percon Corporation Sdn Bhd 18th Floor, Menara PNB, Jalan Tun Razak, 50400 Kuala Lumpur	450M	1996	2001

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
----	------------------------------	----------	----------------	--------	---------------	--------------	------------

INFRASTRUCTURE - RAIL

No	Project Name and Description	Location	Scope	Client	Project Value	Commencement	Completion
1	LRT Ampang Line Extension Package A	Kuala Lumpur	Rail - Structural	BPHB – Tim Sekata J.V Wisma Bina Puri, 1st Floor 88, Jalan Bukit Idaman 8/1 Bukit Idaman 68100 Selayang	250M	2010	2014
2	LRT Ampang Line Extension Package B	Kuala Lumpur	Rail - Structural	MRCB Engineering Sdn Bhd No 8 & 8-1, Jalan Damai Utama 3, Taman Damai Utama, 47180 Puchong, Selangor	350M	2011	2015
3	Depot at Kajang for Sg Buloh - Kajang MRT	Selangor	C&S	SMHB Sdn Bhd 38, Jln 1/76D, Desa Pandan 55100 Kuala Lumpur	140M	2011	2015
4	Construction & Completion of Viaduct Guideway and other Associated Works From Dataran Sunway Station to Section 17- V3	Selangor	Rail - Structural	Mudajaya Corp. Bhd Level 11, Menara Mudajaya, 12A, Jalan PJU 7/3, Mutiara Damansara. 47810 PJ. Sel	260K	2012	2015
5	MRT (Sg Buloh - Kajang) - Package V3 (Dataran Sunway Station to Section 17)	Selangor	Rail - Structural	Acre Works Sdn Bhd M-3-10 Plaza Damas, No.60, Jalan Sri Hartamas, 50480 Kuala Lumpur	400K	2012	2015
6	MRT (Sg Buloh - Kajang) - Package V8 (Taman Mesara to Kajang Station)	Selangor	Rail - Structural	Acre Works Sdn Bhd M-3-10 Plaza Damas, No.60, Jalan Sri Hartamas, 50480 Kuala Lumpur	-	2012	2015
7	Construction Engineering - LRT Package B	Kuala Lumpur	Rail - Structural	Acre Works Sdn Bhd M-3-10 Plaza Damas, No.60, Jalan Sri Hartamas, 50480 Kuala Lumpur	-	2012	2015
10	Construction Engineering - LRT Package A	Kuala Lumpur	Rail - Structural	Acre Works Sdn Bhd M-3-10 Plaza Damas, No.60, Jalan Sri Hartamas, 50480 Kuala Lumpur	-	2012	2013
11	Electrified Double Track Project Between Seremban and Johor Bahru	Kluang - Kulai, Johor	C&S, M&E	DRB-Hicom Berhad	200M	[Project has been deferred by Govt. of Malaysia]	
12	Putrajaya Monorail Line 1	Putrajaya	C&S, M&E	Mtrans Construction Sdn Bhd Wisma Monorail, Jalan Tebing, 50470 Brickfields, Kuala Lumpur	210M	[Project has been deferred by Govt. of Malaysia]	
13	Electrified Double Track Project Between Padang Besar and Ipoh	Padang Besar - Ipoh	C&S	MMC / Gamuda JV	-	2000 [Project on hold]	
14	KL Monorail - Switch Deck Structures	Kuala Lumpur	C&S	Mtrans Construction Sdn Bhd Wisma Monorail, Jalan Tebing, 50470 Brickfields, Kuala Lumpur	4M	2000	2002
15	Electrified Double Track Between Rawang and Ipoh - Proposed Overhead Crossing	Selangor -Perak	C&S, M&E	Ranhill Bersekutu Sdn Bhd	-	2001	2002
16	Express Rail Link Kuala Lumpur to KLIA	Kuala Lumpur	C&S, M&E	YTL Corporation Berhad 11th Floor, Yeoh Tiong Lay Plaza, 55 Jalan Bukit Bintang, 55100 Kuala Lumpur	15M	1999	2000

INDEPENDENT CHECKING ENGINEER

No	Project Name and Description	Location	Scope	Client	Project Value	Commencement	Completion
----	------------------------------	----------	-------	--------	---------------	--------------	------------

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
1	Besraya Highway Extension	Kuala Lumpur	Independent Checking Engineer	IJM Construction Sdn Bhd 43-2, Danau Lumayan Avenue, Jalan Permaisuri Satu, 56000 Kuala Lumpur	500M	2010	2014
2	KL-Kuala Selangor Expressway	Selangor	Independent Checking Engineer for Lenders	KL-Kuala Selangor Expressway Bhd	958M	2008	2011
3	Lebuhraya Kajang Seremban (LEKAS)	Selangor & Negri Sembilan	Independent Checking Engineer for Lenders	Lebuhraya Kajang Seremban Sdn Bhd	766M	2007	2010
4	Al Raha Interchanges 4 & 6	Abu Dhabi, UAE	Independent Checking Engineer for Bridge Structures	Maunsell Consultancy Services Limited	-	2007	2007
5	Muar Bypass	Muar, Johor	Independent Checking Engineer	Ranhill Civil Sdn Bhd	180M	2007	2004
6	Upgrading of Road from Batu Pahat - Ayer Hitam	Batu Pahat - Ayer Hitam, Johor	Independent Checking Engineer	SP Setia Bhd	-	2000	2004
7	Commercial Office Complex, Lot 3C4, Precinct 3, Putrajaya	Putrajaya	C&S, M&E, ICE	Putrajaya Holdings Sdn Bhd	100M	2004	2008
8	Asian Institute of Medicine and Technology (AIMST) University Malaysia	Kedah	Independent Checking Engineer	Maju Institute of Education Development to act as ICE to Lender Bank Pembangunan Infrastructure Malaysia Bhd (BPIMB)	450M	2007	2010

BUILDINGS

No	Project Name and Description	Location	Scope	Client	Project Value	Commencement	Completion
1	Mixed Development Phase 4D6, Bandar Kinrara	Selangor	C&S	Perumahan Kinrara Berhad No.33, 35 & 37, Jalan BK5A/2, Bandar Kinrara, 47180 Puchong, Selangor	150M	2011	2016
2	Proposed Housing Development, Puchong, Selangor	Selangor	M&E	Mitrajaya Homes Sdn Bhd Pusat Perdagangan Puchong Prima, D-01-07 Block D, Jalan Prima 5/1, Persiaran Prima Utama, Taman Puchong Prima, 47150 Puchong, Selangor	30M	2015	2016
3	Projek Penjara Reman (Tegar) Di atas Lot-lot 94 & 490 Hingga 497, Mukim Pulau, Daerah Johor Bahru, Johor Darul Takzim. Fasa 2 (Reka & Bina)	Johor	C&S	Interasegi Sdn Bhd-Tegas Setuju Sdn Bhd JV No. 78-C, Tingkat 3, Jalan Diplomatik, Precinct 15, 62050 Putrajaya	160M	2011	2015
4	Proposed Electrical Distribution Infrastructure Study For Development Of Precinct 8, Putrajaya	Putrajaya	Electrical	Putrajaya Holdings Sdn Bhd Menara PJH No.2, Jalan Tun Abdul Razak, Precinct 2, 62100, Putrajaya	100K	2014	2015
5	Proposed UiTM Raub Campus, Pahang	Pahang	M&E	UiTM	230M	2012	2015
6	Housing Development, Antara Gapi, Hulu Selangor	Selangor	C&S, M&E	Perbadanan Kemajuan Negeri Selangor (PKNS) Tingkat 2-9, Menara HP AIC, Taman Seri Business Park, No 7, Persiaran Sukan, Sek 13, 40100 Shah Alam, Sel	38M	2012	2015

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
7	Provision of Civil & Structural Engineering Consultancy Services for Measat Broadcast Network Systems Sdn Bhd (MBNS) in Respect of the Construction of the Proposed MBNS Cyberjaya Broadcast Centre (MCBC) at Cyber Jaya, Selangor	Selangor	C&S	UT Projects Sdn Bhd Level 7, Menara Maxis KLCC, 50088 Kuala Lumpur	80M	2012	2014
8	Proposed Design, Construction, Completion and Commission of Besraya Eastern Extension - Toll Plaza, Related Buildings, Mechanical and Electrical and Infrastructure Works	Kuala Lumpur	C&S, M&E	Besraya (M) Sdn Bhd Plaza Toll Mines KM 15, Lebuhraya Sg Besi 43300 Seri Kembangan	500M	2011	2014
9	R&D Complex for Petronas Research, Bangi	Selangor	M&E	Das Azman Architects Sdn Bhd 11A-3, 2nd Floor, Mayang Plaza, Jalan SS 26/4, Taman Mayang Jaya, 47301, Petaling Jaya, Selangor	3M	2012	2014
10	Condominium at Jalan Conlay	Kuala Lumpur	C&S, M&E	Suasana Simfoni Sdn Bhd Suite 3018, 3rd Floor, President House, Jalan Sultan Ismail, 50250 Kuala Lumpur	400M	2008	2014 [Completed until piling works]
11	Commercial and Residential Buildings at Olive 108, Section 89, Jalan Ampang	Kuala Lumpur	C&S	Al-Hidayah Group 11th Floor, Menara Hidayah, Jalan 3/27A, Section 1, Wangsa Maiu, 53300 Kuala Lumpur	400M	2010	2014 [Project on hold. Completed until piling works]
12	Water Front, Precinct 8, Putrajaya	Putrajaya	M&E	Putrajaya Holdings Sdn Bhd Project Management 1 Dept Commercial Development Division Putrajaya Holdings S/B Level 5, Block 1, Menara PJH, Precinct 2, 62100 Putrajaya	62M	2011	2014
13	Proposed Residential Developments (Phase 7A) at Alam Damai, Lot PT 9282, Cheras	Kuala Lumpur	C&S	Syarikat Perumahan Pegawai Kerajaan Sdn Bhd Level 8, Setia 1, No.15, Lorong Dungun, Damansara Heights, 50490 Kuala Lumpur	60M	2009	2012
14	Flume Padang Lalang (NCIA)	Kedah	C&S	Northern Corridor Implementation Pihak Berkuasa Perlaksanaan Koridor Utara Aras Dua (East Wing), Menara Bina Darul Aman, 88 Lebuhraya Darul Aman, 05100 Alor Setar, Kedah	30M	2010	2011
15	5G2 - Govt. Building at Precinct 5, Putrajaya	Putrajaya	C&S	Putrajaya Holdings Sdn Bhd Level 5, Block 1, Menara PJH, Precinct 2, Pusat Pentadbiran Kerajaan Persekutuan 62100 Putrajaya	521M	2004	2011
16	Health Centre, Bandar Botanik	Selangor	C&S, M&E	Ministry of Health	40M	2008	2010
17	Cutting & Assembly Workshop at Plo 3, Jalan Pekeliling, Pasir Gudang (MMHE)	Johor	Architectural, C&S, M&E	Malaysia Marine and Heavy Engineering Sdn Bhd PLO 3, Jalan Pekeliling, 81700 Pasir Gudang, Johor	80M	2006	2009
18	Commercial Office Complex Lot 3C4, Precinct 3, Putrajaya	Putrajaya	C&S, M&E, ICE	Putrajaya Holdings Sdn Bhd Level 5, Block 1, Menara PJH, Precinct 2, Pusat Pentadbiran Kerajaan Persekutuan 62100 Putrajaya	100M	2004	2008
19	Structural Survey for the Shell Building	Kuala Lumpur	C&S	Shell IT International Sdn Bhd 1st Floor, Bangunan Shell Malaysia, Changkat Semantan, Damansara Height, 50490 Kuala Lumpur	35M	2008	2008 [12 mths]
20	Comprehensive Assessment and Rehabilitation for the Parliament House	Kuala Lumpur	C&S, M&E	IKRAM Structure Assessment Sdn Bhd Block 7, Taman Ilmu IKRAM Jalan Serdang - Kajang, 43000 Kajang, Selangor	85M	2006	2007
21	Proposed Equestrian Park at Precinct 5 for Putrajaya Development	Putrajaya	Structural (Independent Checking Engineer)	Putrajaya Development	58M	2003	2005

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
22	Temporary Cargo Building at Senai Airport	Johor Bahru	C&S	IJM Construction Sdn Bhd Wisma IJM Jalan Yong Shook Lin, 46050 Petaling Jaya, Selangor	10M	2003	2004
23	Smart School Complex (Phase 3) at Precinct 15, Putrajaya	Putrajaya	C&S, M&E	Putrajaya Holdings Sdn Bhd Project Management 1 Dept Commercial Development Division Putrajaya Holdings S/B Level 5, Block 1, Menara PJH, Precinct 2, 62100 Putrajaya	75M	[Project on hold]	
24	Proposed Interior Fit Out Works at Level 24, 25 & 25M, Menara Maxis KLCC	Kuala Lumpur	Civil & Structural	UT Projects Sdn Bhd Level 37, Menara Maxis, 50088 Kuala Lumpur	12M	2003	2004
25	Hotel / Apartment at PAKA	Kuala Terengganu, Terengganu	C&S, M&E	Kemayan Construction Sdn Bhd	40M	1994	1999
26	Administration Building, Kuala Lumpur International Airport	Sepang	C&S, M&E	Kuala Lumpur International Airport Bhd	80M	1994	1998
27	The Magellan Sutera Hotel	Kota Kinabalu	C&S	Pembinaan OCK Sdn Bhd	210M	1993	1998
28	Pan Pacific Sutera Hotel	Kota Kinabalu	C&S	Pembinaan OCK Sdn Bhd	228M	1993	1998
29	Sunway College - Phase III	Bandar Sunway	C&S, M&E	Sunway City Bhd	35M	1995	1997
30	JKR Workshop, Jalan Chan Sow Lin	Kuala Lumpur	C&S, M&E	Acre Works Sdn Bhd M-3-10 Plaza Damas, No.60, Jalan Sri Hartamas, 50480 Kuala Lumpur	70M	2015	2017
31	Commercial Development on Lot 480726, Proposed Elevated U-Turn and Junction Modification at Cheras Roundabout, Jalan Cheras, Mukim Kuala Lumpur	Selangor	Electrical	Ekovest Properties Sdn Bhd 2nd Floor Wisma Ekovest, No.118, Jalan Gombak 53000 Kuala Lumpur	2.5M	2015	2017
32	Ibu Pejabat Polis Daerah (IPD) at Lot 55, Jln Travers, Kuala Lumpur.	Kuala Lumpur	C&S, M&E	Low Keng Huat 332A-19, 19th Floor, Plaza Ampang City, Jalan Ampang, 50450 Kuala Lumpur	55M	2012	2017
33	Ampang Point Shopping Complex	Kuala Lumpur	C&S, M&E	Nadin Holding Sdn Bhd	40M	1991	1995
34	Mixed Development at Bukit Mas, Taman Melawati (Phase 1B)	Kuala Lumpur	C&S, M&E	MK Associates Sdn Bhd	20M	1990	1995
35	Tower Link / Concert Hall, KLCC	Kuala Lumpur	C&S	Comisa	25M	1994	1996
36	Development of Factory and Houses for the Chemical Manufacturing Plant	Shah Alam	M&E	DS Chemport	15M	1994	1996
37	Bottling Plant Project	Kedah	M&E	Kris Mineral Water Sdn Bhd	9M	1995	1997
38	Istana Perak	Kuala Lumpur	C&S	JKR Perak	-	1994	1997
39	Solid Waster Transfer Station	Kuala Lumpur	C&S, M&E	Dept. of Local Govt. Ministry of Housing & Local Govt.	168M	1998	2001
40	LED Street Lighting Installation at MRR2, Federal Highway & Subang Airport Road (SSAAS)	Kuala Lumpur	C&S, M&E	Philips Malaysia Sdn Bhd	94M	2010	2012
41	Peugeot Flagship Showroom	Shah Alam	C&S, M&E, Construction Supervision	Nasim Sdn Bhd	12M	2011	2012
42	Naza Kia Flagship Showroom	Petaling Jaya	C&S, M&E, Construction Supervision	Naza Kia Malaysia Sdn Bhd	9M	2011	2012
43	MRT (Sg Buloh - Kajang) - Package DPT2: Construction and Completion of Kajang Maintenance Depot, External Works and other associated works	Selangor	C&S	SMHB Sdn Bhd 38, Jln 1/76D, Desa Pandan 55100 Kuala Lumpur	140M	2011	2015
44	Residential Development, 280 Park Homes at Taman Puchong Prima	Selangor	M&E	Leo Vista Sdn Bhd	100M	2010	2015

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion
45	Cybersecurity Headquarters Building	Cyberjaya	M&E, Construction Supervision	Gagasan Pyramid Sdn Bhd, 18-1, Menara 1MK, Premium Tower, Kompleks 1 Mont Kiara, No. 1, Jalan Mont Kiara, 50480 Kuala Lumpur	250M	2013	2019
46	Proposed Residential Development, Plot 17RP2, Precinct 17, Putrajaya	Putrajaya	M&E	Putrajaya Homes Sdn Bhd	180M	2015	Project on hold
47	3 nos. of 50MW Solar Plants in Melaka, Gurun and Kuala Terengganu	Melaka, Gurun, Kuala Terengganu	C&S and M&E	Quantum Solar Park Malaysia Sdn Bhd 1, Jalan PJU 8/5A, Damansara Perdana, 47820 Petaling Jaya, Selangor	200M	2016	2019
48	Proposed Mixed Development on Lot 135, Jalan Peel, KL	Kuala Lumpur	C&S and M&E	Austral Meridien Property Sdn Bhd 332A-19, 19th Floor, Plaza Ampang City, Jalan Ampang, 50450 Kuala Lumpur	180M	2017	2020

INFRASTRUCTURE - MARINE

No	Project Name and Description	Location	Scope	Client	Project Value	Commencement	Completion
1	Port Tanjung Pelepas - Berth 13 & 14	Johor	C&S, M&E	Pelabuhan Tanjung Pelepas Sdn Bhd Block A, Wisma PTP, Jalan Pelabuhan Tanjung Pelepas, TST 507, 81560 Gelang Patah, Johor	300M	2006	2008
2	Port Tanjung Pelepas - Master Plan	Johor	Master Planning, Operating Systems, Hydraulic Analysis, Environmental Planning, Simulation Development Scheduling	Pelabuhan Tanjung Pelepas APM Terminals	2.42M	2008	2008
3	Kuantan Port	Kuantan	Structural	Road Builders (M) Sdn Bhd	13M	1995	1998
4	Telok Burau Resort	Langkawi	C&S, M&E	Sato Kogyo	15M [without fitout]	1985	1990

INFRASTRUCTURE - OTHERS

No	Project Name and Description	Location	Scope	Client	Project Value	Commencement	Completion
1	Don Sahong Hydropower Project	Laos	C&S	Mega First Corporation Bhd	20M	2010	2012
2	Don Sahong Hydropower Project	Laos	Study - Technical Review	Mega First Corporation Bhd		2008	2010
3	Thermal Oxidation Plant Kuala Lumpur	Kuala Lumpur	M&E	Dept. of Local Govt. Ministry of Housing & Local Govt.	25M	1998 [Project on hold]	
4	6.5MW Small Renewable Energy Bio-Mass Power Plant Port Dickson	Port Dickson	C&S, M&E, ICE	RE Power SPV Sdn Bhd	40M	2005	2011
5	Thermal Oxidation Plant Labuan	Labuan	M&E	Dept. of Local Govt. Ministry of Housing & Local Govt.	25M	1998	2002

MMSB CONSULT SDN BHD**LIST OF CURRENT PROJECTS****INFRASTRUCTURE - RAIL**

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion	Current Status
1	East Coast Rail Link (ECRL) Project from Wakaf Bharu to ITT Gombak - ICE	Selangor, Pahang, Terengganu & Kelantan	ICE, Architectural, C&S, Geotechnical, M&E	Malaysia Rail Link Sdn Bhd Level 15, Menara 1 Dutamas, Solaris Dutamas No. 1, Jalan Dutamas 1 50480 Kuala Lumpur Tel: +603 2724 2524	55B	2017	2026	20%
2	Light Rail Transit (LRT 3) Project From Bandar Utama to Johan Setia [Western Corridor] - DDC	Selangor	C&S, M&E	MRCB George Kent Sdn Bhd Level 3, Menara MRCB, No. 2, Jalan Majlis 14/10, 40000 Shah Alam, Selangor Tel: +603 5033 6888	9B	2016	2021	45%
3	Chennai Metro Phase 2 Package P2C506 -DDC	Chennai, India	Viaduct Structure	Chennai Metro Rail Limited CMRL Depot, Admin Building, Poonamallee High Road, Koyambedu, Chennai - 600107, India Tel: +9144 23792000		2019	2025	10%

INFRASTRUCTURE - HIGHWAY & BRIDGES

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion	Current Status
1	Setiawangsa - Pantai Expressway - [SPE] (DUKE 3) - Section 3	Selangor	C&S, Geotechnical	Ekovest Project Management Sdn Bhd Ground Floor, Wisma Ekovest 118, Jalan Gombak 53000 Kuala Lumpur Tel: +603 4021 5948	600M	2014	2020	75%
2	SUKE CA1- Alternative Design of 4 Long Spans	Selangor	C&S	Acre Works Sdn Bhd M-3-10 Plaza Damas No.60, Jalan Sri Hartamas 50480 Kuala Lumpur Tel: +603 6203 3819	430M	2018	2020	80%

BUILDINGS

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion	Current Status
1	Cadangan Pembangunan Ibu Pejabat Perbadanan Filem Nasional Malaysia (FINAS)	Selangor	C&S	Nilaitera Sdn Bhd 35-01, Level 35 (West Wing), Q-Sentral 2A, Jalan Stesen Sentral 2 50470 Kuala Lumpur Tel: +603 2303 3788	140M	2016	2020	25%

No	Project Name and Description	Location	Scope of Works	Client	Project Value	Commencement	Completion	Current Status
2	KPJ Damansara 2 Specialist Hospital, Sg. Penchala	Sg. Penchala, Kuala Lumpur	C&S, M&E	Nadayu Murni Sdn Bhd Level 5, Menara Standard Chartered P.S. 38, No. 30, Jalan Sultan Ismail 50250 Kuala Lumpur Tel: +603 2141 5775	200M	2014	2020	95%
3	Integrated Development, 8MD3, Precinct 8, Putrajaya	Putrajaya	M&E	Putrajaya Holdings Sdn Bhd Menara PJH No. 2, Jalan Tun Abdul Razak, Precinct 2 62100 Putrajaya Tel: +6038883 8888	544M	2021	2022	25%
4	Proposed Mixed Development at Jalan Shah Bandar, Section 90, Kuala Lumpur Wilayah Persekutuan (Peel Road 2)	Kuala Lumpur	C&S, M&E	Tanda Warisan Sdn Bhd c/o 332A-19, 19th Floor, Plaza Ampang City, Jalan Ampang 50450 Kuala Lumpur Tel: +6034257 9899	70M	2018	2023	BP submission stage

7.0 Registrations



PEJABAT PENDAFTAR SYARIKAT
MALAYSIA

BORANG 9

AKTA SYARIKAT, 1965

No. Syarikat

239789 H

Seksyen 16 (4)

PERAKUAN PEMERBADANAN SYARIKAT SENDIRIAN

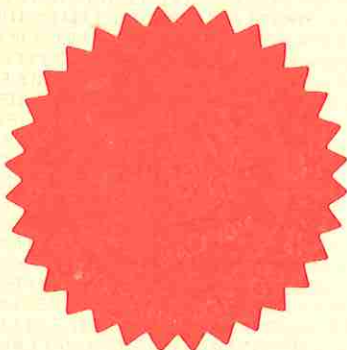
Adalah diperakui bahawa

SHARMA & ZAKARIA SDN. BHD.

telah diperbadankan di bawah Akta Syarikat, 1965 pada dan mulai
dari 08 haribulan Mei 1992, dan bahawa syarikat ini
adalah sebuah syarikat berhad menurut syer dan bahawa syarikat ini adalah
sebuah syarikat sendirian.

Dibuat di bawah tandatangan dan meterai saya di Kuala Lumpur.

pada 08 haribulan Mei 1992



(AZIZAH BTE KHAMATI)
PENDEKUT PENDAFTAR SYARIKAT
MALAYSIA



PEJABAT PENDAFTAR SYARIKAT
(Registry of Companies)
MALAYSIA

BORANG 13

AKTA SYARIKAT 1965

[Seksyen 23 (2)]

No. Syarikat

239789

H

PERAKUAN PEMERBADANAN ATAS
PERTUKARAN NAMA SYARIKAT

Adalah diperakui bahawa

SHARMA & ZAKARIA SDN. BHD.

yang telah diperbadankan di bawah Akta Syarikat 1965, pada

08 haribulan Mei, 1992, sebagai sebuah syarikat

Persendirian, pada 13 haribulan September, 1995,

telah menukar namanya kepada

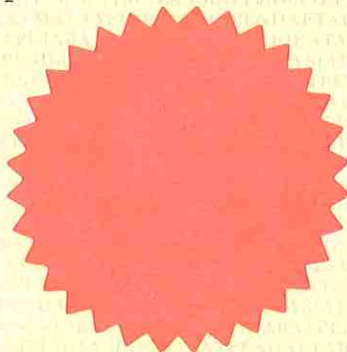
MAUNSELL, SHARMA & ZAKARIA SDN. BHD.

dan bahawa syarikat ini adalah sebuah syarikat Persendirian

dan adalah sebuah syarikat berhad menurut Syer

Diberi di bawah tandatangan dan meterai saya di Kuala Lumpur

pada 13 haribulan September, 1995.



RAJA HABIBAH BTE RAJA SAIDIN
PENOLONG PENDAFTAR SYARIKAT
MALAYSIA



SURUHANJAYA SYARIKAT MALAYSIA COMPANIES COMMISSION OF MALAYSIA

BORANG 13 AKTA SYARIKAT 1965

[Seksyen 23(2)]

No. Syarikat

239789

H

PERAKUAN PEMERBADANAN ATAS PERTUKARAN NAMA SYARIKAT

Adalah diperakui bahawa

MAUNSELL, SHARMA & ZAKARIA SDN. BHD.

yang telah diperbadankan di bawah Akta Syarikat 1965, pada
08 haribulan Mei 1992, sebagai sebuah syarikat persendirian,
pada 17 haribulan November 2005 telah menukar namanya kepada

MAUNSELL MALAYSIA SDN. BHD.

dan bahawa syarikat ini adalah sebuah syarikat persendirian
dan adalah sebuah syarikat berhad menurut syer.

Diberi di bawah tandatangan dan meterai saya di Kuala Lumpur
pada 17 haribulan November 2005.

UserID: puteh

Date: 17/11/2005 12:13:16

PUTEH BINTI MAHMOOD
PENDAFTAR SYARIKAT
MALAYSIA



**SURUHANJAYA SYARIKAT MALAYSIA
COMPANIES COMMISSION OF MALAYSIA**

**BORANG 13
AKTA SYARIKAT 1965**

[Seksyen 23(2)]

No. Syarikat

239789

H

**PERAKUAN PEMERBADANAN ATAS PERTUKARAN
NAMA SYARIKAT**

Dengan ini diperakui bahawa

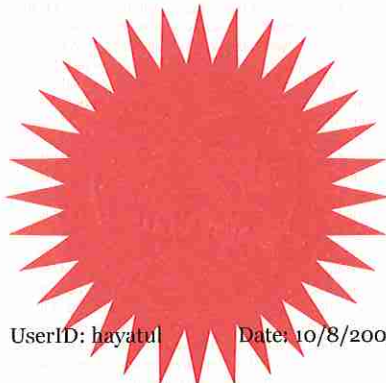
MAUNSELL MALAYSIA SDN. BHD.

yang telah diperbadankan di bawah Akta Syarikat 1965, pada
o8 haribulan Mei 1992, sebagai sebuah syarikat persendirian,
pada o8 haribulan Oktober 2009 telah menukar namanya kepada

MMSB CONSULT SDN. BHD.

dan bahawa syarikat ini adalah sebuah syarikat persendirian
dan adalah sebuah syarikat berhad menurut syer.

Diberi di bawah tandatangan dan meterai saya di Kuala Lumpur
pada o8 haribulan Oktober 2009.



**NOORLIDA HANIM BINTI AHMAD
PENOLONG PENDAFTAR SYARIKAT
MALAYSIA**



KEMENTERIAN KEWANGAN MALAYSIA

SIJIL AKUAN PENDAFTARAN FIRMA PERUNDING

NO. SIJIL : J11739342942545927
NO. RUJUKAN PENDAFTARAN : 465-00000659
TEMPOH SAH LAKU : 28/05/2020 - 02/06/2023

Bahawa dengan ini diperakui syarikat :

MMSB CONSULT SDN. BHD. (239789-H)

A-8-2 & A-8-3

PLAZA KELANA JAYA

JALAN SS 7/13A, KELANA JAYA

PETALING

47301 PETALING JAYA

SELANGOR, MALAYSIA

Telah berdaftar dengan Kementerian Kewangan Malaysia dalam bidang bekalan/perkhidmatan di bawah sektor, bidang dan sub-bidang seperti di Lampiran A. Kelulusan ini adalah tertakluk kepada syarat-syarat seperti yang dinyatakan di Lampiran B. Individu yang diberi kuasa oleh syarikat bagi urusan perolehan Kerajaan adalah seperti berikut :

ASHOK KUMAR SHARMA	561117075779	PENGARAH URUSAN
ADANAN BIN MOHAMED HUSSAIN	560609105773	CHAIRMAN
AMAR RAJ SHARMA	900723105505	DIRECTOR, BUSINESS DEVELOPMENT
AUGUSTINE MARIA A/L A.AROKIASAMY	530818106089	CHIEF OPERATING OFFICER
BALENDERAN A/L ATCHALINGAM	521002105003	TECHNICAL DIRECTOR
DEBORAH LINDA THESEIRA	670526106006	OFFICE MANAGER
NORMASLINA BINTI MUSTAPHA	780815105672	HR EXECUTIVE
AZMI BIN AB RAHMAN	620414045143	TECHNICAL DIRECTOR
MAK WING HON	650207105067	TECHNICAL DIRECTOR
SAJAL NANDY	Z2430261	TECHNICAL DIRECTOR

t.t

DATO' ZAMZURI BIN ABDUL AZIZ

Bahagian Perolehan Kerajaan

b.p. Ketua Setiausaha Perbendaharaan

Kementerian Kewangan Malaysia

Tarikh Berdaftar Dengan Kementerian Kewangan Malaysia : 28/05/2020

(Sijil ini adalah cetakan komputer dan tidak memerlukan tandatangan)

NO SIJIL : J11739342942545927
NO RUJUKAN PENDAFTARAN : 465-00000659
TEMPOH SAH LAKU : 28/05/2020 - 02/06/2023

BIL	TARIKH DAFTAR BIDANG	KOD BIDANG	KETERANGAN	STATUS
1	27/05/2020	330101	PERKHIDMATAN PERUNDING FIZIKAL/ KEJURUTERAAN/ KEJURUTERAAN AWAM	Aktif
2	27/05/2020	330102	PERKHIDMATAN PERUNDING FIZIKAL/ KEJURUTERAAN/ KEJURUTERAAN STRUKTUR	Aktif
3	27/05/2020	330103	PERKHIDMATAN PERUNDING FIZIKAL/ KEJURUTERAAN/ KEJURUTERAAN ELEKTRIK	Aktif
4	27/05/2020	330104	PERKHIDMATAN PERUNDING FIZIKAL/ KEJURUTERAAN/ KEJURUTERAAN MEKANIKAL	Aktif

Tarikh Berdaftar Dengan Kementerian Kewangan Malaysia : 28/05/2020

SYARAT KELULUSAN SIJIL AKUAN PENDAFTARAN SYARIKAT

1. SYARAT AM

- 1.1 Kelulusan ini diberi berdasarkan maklumat-maklumat yang telah disampaikan oleh pihak syarikat tuan.
- 1.2 Apa-apa perubahan ke atas maklumat-maklumat tersebut hendaklah dibuat kemaskini secara *online* di Modul Kemaskini Profil di alamat www.eperolehan.gov.my dalam tempoh masa dua puluh satu (21) hari dari tarikh perubahan tersebut berlaku dan sekiranya gagal berbuat demikian boleh mengakibatkan tindakan seperti di para 1.5 di bawah.
- 1.3 Syarikat hendaklah mengemukakan segala maklumat dalam tempoh yang ditetapkan apabila diminta oleh Kementerian Kewangan Malaysia. Kegagalan berbuat demikian akan mengakibatkan tindakan seperti di para 1.5 di bawah.
- 1.4 Syarikat hendaklah memastikan bahawa bidang yang telah didaftarkan dalam sijil ini tidak bertindih dengan bidang yang telah diluluskan ke atas mana-mana syarikat seperti berikut:
 - 1.4.1 Mempunyai Pemilik atau Lembaga Pengarah/Pengarah, Pengurusan dan Pekerja yang sama; atau
 - 1.4.2 Beroperasi di premis yang sama.
- 1.5 Kementerian Kewangan Malaysia berhak untuk membuat lawatan atau pemeriksaan audit pada bila-bila masa tanpa dimaklumkan terlebih dahulu. Kegagalan mematuhi syarat-syarat pendaftaran, kod bidang dan/atau pendaftaran syarikat tuan boleh digantung/dibatalakan dan syarikat, Pemilik serta Lembaga Pengarah/Pengarah diambil tindakan tatatertib termasuk disenaraihitamkan tanpa apa-apa notis jika didapati maklumat yang diberi tidak benar.
- 1.6 Syarikat yang baru didaftarkan tidak dibenarkan membuat sebarang perubahan ke atas Pemilik atau Pengarah dalam tempoh enam (6) bulan daripada tarikh syarikat didaftarkan.
- 1.7 Kegagalan syarikat membuat permohonan pembaharuan pendaftaran selepas satu (1) tahun dari tarikh tamat tempoh pendaftaran boleh mengakibatkan pendaftaran syarikat dengan Kementerian Kewangan Malaysia akan dibatalakan dan dikeluarkan secara automatik daripada Sistem ePerolehan. Syarikat hendaklah membuat permohonan baru.

2. PENGGANTUNGAN/PEMBATALAN PENDAFTARAN

- 2.1 Pendaftaran syarikat akan digantung/dibatalakan sekiranya didapati syarikat melakukan kesalahan seperti berikut:
 - 2.1.1 Syarikat/pemilik/perkongsian/pengarah/mana-mana ahli pengurusan telah melakukan jenayah dan didapati bersalah oleh mahkamah di Malaysia atau luar negeri atau mengalami tanggungan sivil.
 - 2.1.2 Syarikat menarik balik tawaran sebelum tender dipertimbangkan atau menolak setelah tawaran dibuat.
 - 2.1.3 Syarikat gagal melaksanakan obligasi kontrak-kontrak yang telah ditandatangani dengan Kerajaan.
 - 2.1.4 Syarikat didapati meminda Sijil Akuan Pendaftaran Syarikat dengan tujuan menipu atau lain-lain maksud.
 - 2.1.5 Syarikat membenarkan Sijil Akuan Pendaftaran Syarikat disalahgunakan oleh individu/syarikat lain.
 - 2.1.5 Syarikat didapati membuat pakatan harga dengan syarikat-syarikat lain semasa memasuki tender Kerajaan atau subkontrak tanpa persetujuan terlebih dahulu daripada Agensi Kerajaan yang terlibat.

3. PEMBAHARUAN

- 3.1 Syarikat tuan hendaklah mengemukakan permohonan pembaharuan pendaftaran tiga (3) bulan sebelum tamat tempoh pendaftaran.
- 3.2 Permohonan yang diterima selepas tamat tempoh pendaftaran adalah dianggap pendaftaran pembaharuan.

4. HAK KERAJAAN

- 4.1 Sijil Akuan Pendaftaran Syarikat yang dikeluarkan secara *Virtual* adalah HAK KERAJAAN. Kerajaan berhak untuk menarik balik pendaftaran/digantung/dibatalakan sekiranya syarikat dikenakan tindakan tatatertib selaras dengan 1PP/PK8 (Pekeliling Perbendaharaan/Perolehan Kerajaan 8).

5. PENYERTAAN PEROLEHAN KERAJAAN

- 5.1 Dengan pengeluaran Sijil *Virtual*, Sijil ini tidak lagi perlu ditunjukkan semasa mengambil dokumen perolehan Kerajaan (pembelian terus, tender/sebut harga dan lain-lain kaedah perolehan) kecuali bagi Agensi Kerajaan yang tiada capaian internet.
- 5.2 Syarikat hendaklah memastikan pendaftaran dengan Kementerian Kewangan Malaysia masih sah laku sepanjang tempoh kontrak berkuat kuasa.

6. PERINGATAN MENGENAI KESALAHAN RASUAH

- 6.1 Sebarang perbuatan atau percubaan rasuah untuk menawar atau memberi, meminta atau menerima apa-apa suapan secara rasuah kepada dan daripada mana-mana orang berkaitan perolehan Kerajaan merupakan suatu kesalahan jenayah di bawah Akta Suruhanjaya Pencegahan Rasuah Malaysia 2009 [Akta 694].

AKTA PENDAFTARAN JURUTERA 1967
PERATURAN-PERATURAN PENDAFTARAN JURUTERA 1990
(PERATURAN 35)



No. Perakuan : **2293-1360-00000-BC-239**

LEMBAGA JURUTERA MALAYSIA

PERAKUAN PENDAFTARAN SEBAGAI AMALAN JURUTERA PERUNDING

INI ADALAH UNTUK MEMPERAKUI BAHAWA

Nama : **Perbadanan Korporat**
MMSB CONSULT SDN. BHD.

Alamat : **A-8-2 & A-8-3 PLAZA KELANA JAYA**
JALAN SS 7/13A
KELANA JAYA
47301 PETALING JAYA
SELANGOR
MALAYSIA

Cawangan Kejuruteraan: **** CIVIL, MECHANICAL, ELECTRICAL ****

yang telah mematuhi kehendak-kehendak Akta Pendaftaran Jurutera 1967 dan telah membayar fee pendaftaran didaftarkan sebagai suatu AMALAN JURUTERA PERUNDING dalam cawangan kejuruteraan yang dinyatakan di atas tertakluk kepada syarat-syarat yang dinyatakan di bawah.

Syarat-syarat:

Perakuan pendaftaran ini akan habis tempoh pada **31 Disember 2022**



(DATUK Ir. HAJI MOHAMAD ZULKEFLY BIN SULAIMAN)
Yang Dipertua

(Ir. Dr. MEGAT ZUHAIRY BIN MEGAT TAJUDDIN)
Pendaftar



The Association of Consulting Engineers Malaysia

certifies that

MMSB Consult Sdn Bhd

is a Member of

ACEM Panel of Consulting Firms

Membership no.: P048

Member since: 11 May 1993



Ir. Wong Loo Min
President



Ir. Prem Kumar
Deputy President



Ir. Looi Hip Pey
Honorary Secretary



IBU PEJABAT
JABATAN BOMBA DAN PENYELAMAT
MALAYSIA
Fire And Rescue Department of Malaysia
Lebuh Wawasan, Presint 7
62250 PUTRAJAYA
MALAYSIA



Telefon: : 603-88880036
Facsimile : 603-88927977 / 88927978
Laman Web : www.bomba.gov.my
E-mail : bkkjbpm@bomba.gov.my

Ruj Tuan :
Ruj. Kami : JBPM/IP/BKK: 700-7/4/12 / (2)
Tarikh : 10 September 2020

Pengarah
MMSB Consult Sdn Bhd
A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS 7/13A, Kelana Jaya
47301 PETALING JAYA
Selangor

Tuan,

**PERMOHONAN PEMBAHARUAN UNTUK MENJALANKAN KHIDMAT PERUNDING
SERTA *INDEPENDENT REVIEWER (THIRD PARTY REVIEWER)* BAGI SISTEM
PERFORMANCE BASED – FIRE SAFETY ENGINEERING DESIGN UNTUK PREMIS
KHAS DAN PROJEK MEGA DI MALAYSIA**

Merujuk kepada surat tuan bil. MMSB/REG/BOMBA/2018/00 bertarikh 17 September 2020 berhubung perkara di atas.

2 Sukacitanya dimaklumkan bahawa Jabatan ini tiada halangan dan bersetuju dengan permohonan pembaharuan Firma Perunding tuan bagi menjalankan khidmat perunding dan *Independent Reviewer (Third Party Reviewer)*, berdasarkan sistem *Performance Based – Fire Safety Engineering Design* bagi semua projek-projek untuk premis khas dan projek mega di Malaysia.

3 Adalah dimaklumkan bahawa, *Fire Safety Engineer* yang dilantik adalah **Dr. Syed Amer Magrabi**.

4 Kelulusan ini adalah diberikan bagi tempoh satu tahun iaitu dari **1 September 2020 sehingga 31 Ogos 2021**.

5 Walaubagaimanapun, adalah diingatkan bahawa kelulusan ini adalah tertakluk kepada beberapa syarat atau peraturan Jabatan ini dari masa ke semasa seperti berikut:

..12

'CEPAT DAN MESRA'

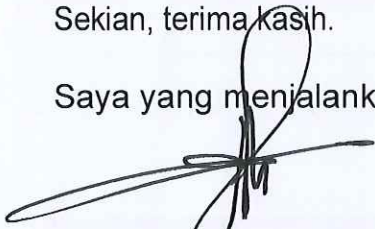


-2-

- 5.1 Firma tuan tidak boleh menjalankan kedua-dua khidmat perunding iaitu merekabentuk dan *third party reviewer* bagi cadangan pemajuan yang sama.
- 5.2 Kelulusan ini tertakluk kepada peraturan dan garis panduan JBPM dan sekiranya terdapat apa-apa pindaan pada mana-mana peraturan, perintah tetap atau undang-undang Jabatan ini, pihak tuan perlu mengemukakan permohonan semula.
- 5.3 Kelulusan ini juga tertakluk kepada peraturan-peraturan yang ditetapkan melalui Perintah Tetap Jabatan Bilangan 3 Tahun 2003 mengenai *Performance Based System*.
- 5.4 Mengemukakan ke Jabatan ini salinan *Professional Indemnity Insurance Certificate* jika tempoh perlindungan bagi polisi semasa yang dikemukakan tamat selepas permohonan baru atau pembaharuan tamat.

Sekian, terima kasih.

Saya yang menjalankan amanah,



(EDWIN GALAN TERUKI)

Pengarah

Bahagian Keselamatan Kebakaran

Jabatan Bomba dan Penyelamat Malaysia

EGT/MSA/mam

Senarai Semak Pendaftaran Firma Perunding

Performance Based Fire Safety Engineering Design

- | | | |
|----------------------------------|---|-------------------------------|
| 1. Perunding | : | MMSB Consult Sdn Bhd |
| 2. Prinsipal Jurutera (Tempatan) | : | Ir. Azmi bin Abdul Jalil |
| a) No. Pendaftaran | : | C14440 |
| b) Badan Pendaftar | : | Lembaga Jurutera Malaysia |
| 3. Fire Engineer | : | Dr. Syed Amer Magrabi |
| ▪ No. Pendaftaran | : | 048 |
| ▪ Badan Pendaftar | : | Singapore Civil Defence Force |

Kategori Permohonan : **PEMBAHARUAN**
(1/9/2020 – 31/8/2021)

Semakan dokumen sokongan

Bil	Butiran	Ada / Tiada	Catatan
1	Profile Syarikat Perunding	Ada	Seperti lampiran
2	Resume: i. Principal Engineer ii. Fire Engineer	Ada	Berdasarkan resume kelulusan yang diberikan
3	Salinan Polisi Profesional Indemnity Insurans	Ada	Allianz General Insurance Company (Malaysia) Berhad. Tempoh : 6 Jan. 2020 – 5 Jan. 2021
4	Salinan Sijil Jurutera Bertauliah & Fire Safety Engineer	Ada	<ul style="list-style-type: none"> ▪ Lembaga Jurutera Malaysia ▪ Singapore Civil Defence Force
5	Senarai Projek yang dilaksanakan oleh Fire Engineer berdasarkan PBA	Ada	Senarai Projek dilaksanakan di Malaysia

Semakan telah dibuat dan ianya memenuhi keperluan-keperluan yang disyaratkan. Dikemukakan untuk pertimbangan YS Pengarah:


(EDWIN GALAN TERUKI)
 Pengarah

Bahagian Keselamatan Kebakaran
Jabatan Bomba dan Penyelamat Malaysia

Tarikh: 10/9/2020

Lampiran 1

Maklumat Pendaftaran Firma Perunding
Performance Based – Fire Safety Engineering Design

- | | | |
|---|---|---|
| 1. Perunding | : | MMSB Consult Sdn Bhd |
| 2. Alamat | : | A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS7/13A, Kelana Jaya
47301 Petaling Jaya
SELANGOR |
| 3. Prinsipal Jurutera (Tempatan) | : | Ir. Azmi bin Abdul Jalil |
| a) No. Pendaftaran | : | 4440 |
| b) Badan Pendaftar | : | Lembaga Jurutera Malaysia |
| 4. Jurutera Perunding Kebakaran
(Fire Safety Engineer) | : | Dr. Syed Amer Magrabi |
| a) No. Pendaftaran | : | 048 |
| b) Badan Pendaftar | : | Singapore Civil Defence Force |
| 5. Firma | : | Exova (Malaysia) Sdn Bhd |
| 6. Alamat | : | No.34, Jln Mega 1/5
Taman Perindustrian Nusa
Cemerlang, 81550 Gelang Patah |



Certificate MY05/00520

The management system of

MMSB Consult Sdn. Bhd.

A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS 7/13A, Kelana Jaya
47301 Petaling Jaya, Selangor Darul Ehsan
MALAYSIA

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

**Provision of Consulting Engineering and Project Management in the
Sectors of Transport, Environment, Power and Facilities**

This certificate is valid from 22 August 2020 until 21 August 2023 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.
Issue 8. Certified since 22 August 2005



Authorised by

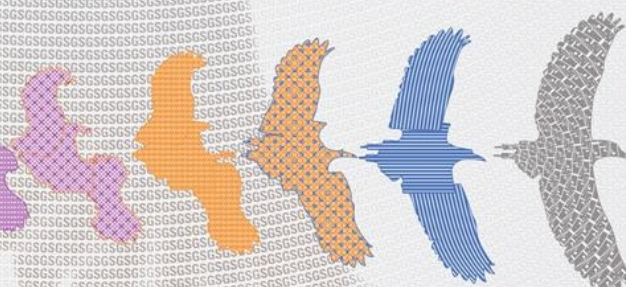
SGS United Kingdom Ltd
Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN, UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

HC: SGS 9001 2015 0818

Page 1 of 1



0005



This document is a Web version of SGS certificate for electronic use exclusively. It shall only be available by clicking on SGS Certification Mark which has been posted on Your website. It shall not be printed in anyway. This document is copyright protected. No content or appearance may be reproduced without the express written permission of SGS. Any misuse, alteration, forgery or falsification is unlawful.



Certificate MY05/0134

The management system of

MMSB Consult Sdn. Bhd.

A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS 7/13A, Kelana Jaya
47301 Petaling Jaya, Selangor Darul Ehsan
MALAYSIA

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

**Provision of Consulting Engineering and Project Management in the
Sectors of Transport, Environment, Power and Facilities**

This certificate is valid from 22 August 2020 until 21 August 2023 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.

Issue 8. Certified since 22 August 2005

Authorised by



SGS (Malaysia) Sdn Bhd
Lot 3 & Lot 4, Persiaran Jubli Perak, Seksyen 22
40300 Shah Alam, Selangor Darul Ehsan, MALAYSIA
t. 603 - 7627 0080 www.sgs.com

Page 1 of 1



QS 18112006 CB 04



This document is a Web version of SGS certificate for electronic use exclusively. It shall only be available by clicking on SGS Certification Mark which has been posted on Your website. It shall not be printed in anyway. This document is copyright protected. No content or appearance may be reproduced without the express written permission of SGS. Any misuse, alteration, forgery or falsification is unlawful.



Certificate MY18/02636

The management system of

MMSB Consult Sdn. Bhd.

A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS 7/13A, Kelana Jaya
47301 Petaling Jaya, Selangor Darul Ehsan
MALAYSIA

has been assessed and certified as meeting the requirements of

ISO 14001:2015

For the following activities

**Provision of Consulting Engineering and Project Management in the
Sectors of Transport, Environment, Power and Facilities.**

This certificate is valid from 21 January 2021 until 02 January 2024 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.

Issue 2. Certified since 03 January 2018

The audit leading to this certificate commenced on 08 December 2020
Previous issue certificate validity date was until 02 January 2021

Authorised by

SGS United Kingdom Ltd

Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN, UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

HC SGS14001 2015 0818

Page 1 of 1



0005



This document is a Web version of SGS certificate for electronic use exclusively. It shall only be available by clicking on SGS Certification Mark which has been posted on Your website. It shall not be printed in anyway. This document is copyright protected. No content or appearance may be reproduced without the express written permission of SGS. Any misuse, alteration, forgery or falsification is unlawful.



Certificate MY18/02637

The management system of

MMSB Consult Sdn. Bhd.

A-8-2 & A-8-3, Plaza Kelana Jaya
Jalan SS 7/13A, Kelana Jaya
47301 Petaling Jaya, Selangor Darul Ehsan
MALAYSIA

has been assessed and certified as meeting the requirements of

ISO 14001:2015

For the following activities

**Provision of Consulting Engineering and Project Management in the
Sectors of Transport, Environment, Power and Facilities.**

This certificate is valid from 22 January 2021 until 04 January 2024 and
remains valid subject to satisfactory surveillance audits.
Recertification audit due a minimum of 60 days before the expiration date.

Issue 2. Certified since 05 January 2018

The audit leading to this certificate commenced on 08 December 2020

Previous issue certificate validity date was until 04 January 2021

Authorised by

SGS (Malaysia) Sdn Bhd
Lot 3 & Lot 4, Persiaran Jubli Perak, Seksyen 22
40300 Shah Alam, Selangor Darul Ehsan, MALAYSIA
t 603 - 7627 0080 www.sgs.com

Page 1 of 1



ACB EMS 03



This document is a Web version of SGS certificate for electronic use exclusively. It shall only be available by clicking on SGS Certification Mark which has been posted on Your website. It shall not be printed in anyway. This document is copyright protected. No content or appearance may be reproduced without the express written permission of SGS. Any misuse, alteration, forgery or falsification is unlawful.

MMSB CONSULT SDN BHD

Co. Reg. 239789-H

A-8-2 & A-8-3, Plaza Kelana Jaya

Jalan SS 7/13A, Kelana Jaya

47301 Petaling Jaya

Selangor Darul Ehsan

Malaysia

T +60 3 79498600

F +60 3 7874 9600

www.mmsbconsult.com.my