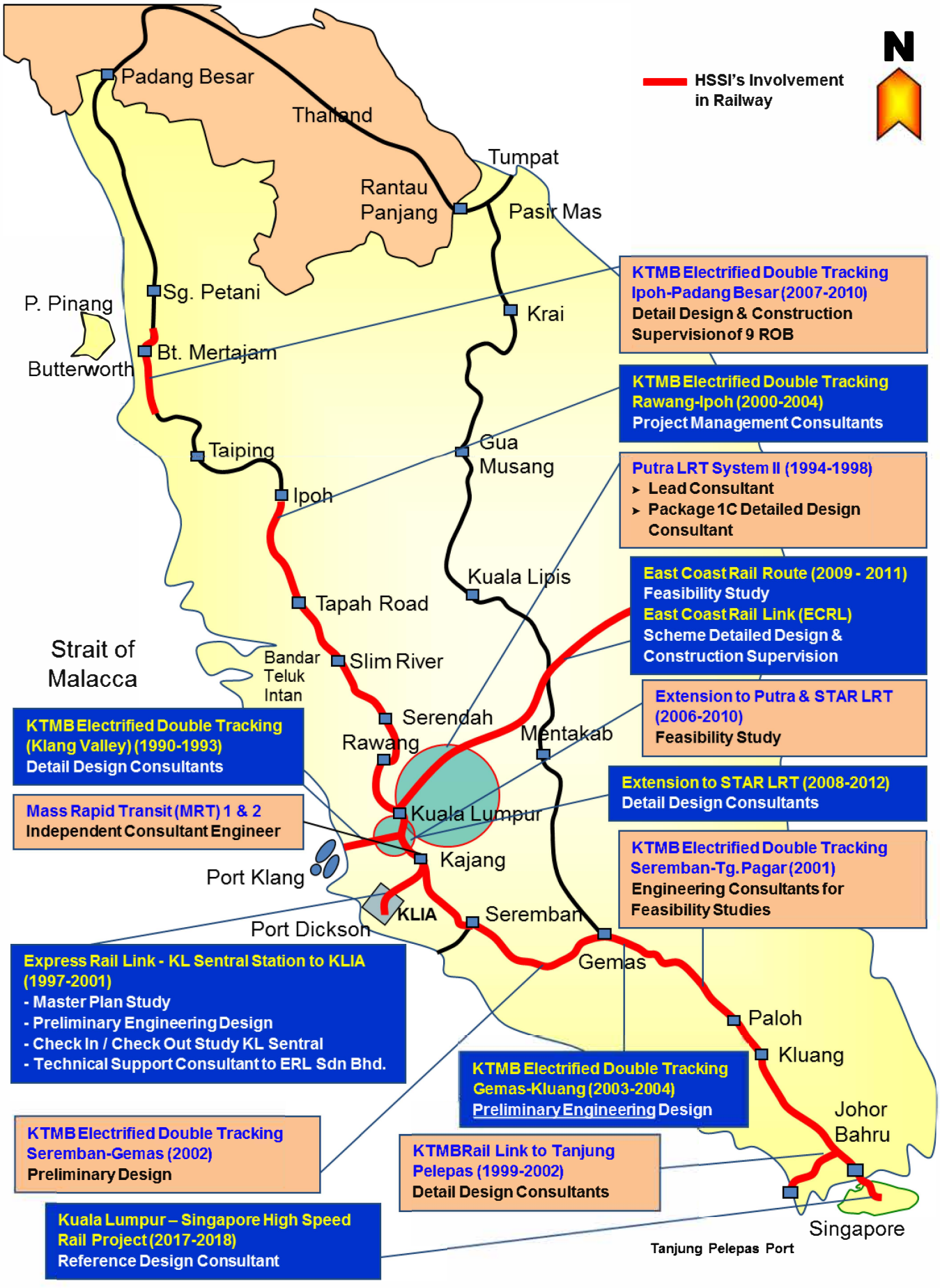
# Railway

hgs

ENGINEERS

*total engineering services*

# HSSI RAILWAY EXPERIENCE IN MALAYSIA



# Mission Statement

*"To be recognised as Malaysia's premier one stop one engineering service provider, as reflected in our continuous outstanding contribution to the development of major infrastructure; and maintain this position through excellent services and superior technical quality, innovation and performance".*

This vision is realised through:

Personal involvement of the directors to provide strong leadership to ensure timely and speedy implementation of both corporate objectives & goals.

Existing effective and efficient corporate structure to provide maximum operating efficiencies to the Group.

The vast base of experience within the Group that helps to leverage its niche in the engineering arena.

The availability of capital within the Group to provide adequate funding strength for Group operations.

Continuous quality engineering services upgrading through constant re-engineering process and training while maintaining the existing standard of professionalism.

# Corporate Information

HSS Engineers Berhad (HEB or the Company) is an investment holding company which was incorporated on 23 January 2015 under the Companies Act 1965 as a private limited company under the name of HSS Engineers Sdn. Bhd. before it converted into a public limited company. The Company assumed its present name on 31 March 2015. The Group operates from 3 main offices which are based in Kuala Lumpur and Penang in Malaysia as well as Chennai in India. HEB, had on 28 March 2018, completed the acquisition of SMHB Engineering Sdn Bhd (SMHB) which provides engineering services and project management consultancy for the water sector.

Its associate company, HSS Integrated Sdn Bhd (HSSI), is currently one of the leading ISO Certified (ISO 9001:2015, ISO 14001:2015 and OHSAS 18001:2007) engineering consultancy firms in Malaysia. With a proud history over the last 30 years, HSSI is a firm with shared values, an open culture, commitment to services & quality, provision of high standards of professionalism and business ethics, along with a leading edge approach to delivering a sustainable future.

Our expertise includes project management, master planning, preliminary and detailed engineering designs, construction supervision, contracts administration, feasibility studies for major infrastructure project in South East Asia, Middle East and North Africa (MENA) and South Asia. The Group's results are evident from the track records of vast experience and timely delivery of projects in addition to the established good working relationships with clients from both the public and private sectors.

As a total engineering solution Firm with a global total workforce of over 1000 staff of which more than half are engineers, HEB is able to draw on resources within and is well equipped to handle projects of varying magnitudes. HEB is confident that as a group, similar engineering consultancy services can be provided in other parts of the world mainly in the transportation and urban infrastructure development projects. The group is confident that with the experience and track record, it will be able to provide a high standard of engineering services to any client.

# Railway Capability

A leader in state, regional, and multimodal planning, HSSI aims for environmentally sound and cost efficient transportation solutions.

**Design**
HSSI has designed more than 3,000 km length of track comprises heavy and light rail systems, guideways and commuter rail - more than any other firm, and integral to HSSI's design portfolio is the full spectrum of transit facilities: numerous tunnels, bridges, bus shelters, intermodal terminals, transit maintenance facilities and transit stations throughout this region.

**Program Delivery**
Fully equipped to provide the project delivery system that best fits the client's needs, HSSI has played a full range of roles on Design/Build, Design-Build-Operate-Maintain (DBOM) and Build-Operate-Transfer (BOT) projects.

**Project Management**
Assembling the full project team and managing complex transit programs - from initial planning phases through operations - is a particular strength.

**Construction Services**
HSSI is focused on streamlining the construction process. Partnering, value engineering and a HSSI designed project control system for document management combined to facilitate project completions with minimal claims, delays and conflicts.

**Operations and Maintenance**
HSSI has been involved in the design of numerous maintenance facilities in the region, all of which have met the requirements of the respective service operators.

# Services

**Project Identification and Assessment of Needs**

**Location Studies**

**Land and Geotechnical Survey**

**Technical and Engineering Feasibility**

**Environmental Impact Assessment**

**Economic and Financial Appraisals**

**Preliminary and Detailed Design**

**Value Engineering**

**Specifications and procurement**

**Contract Documentation and Administration**

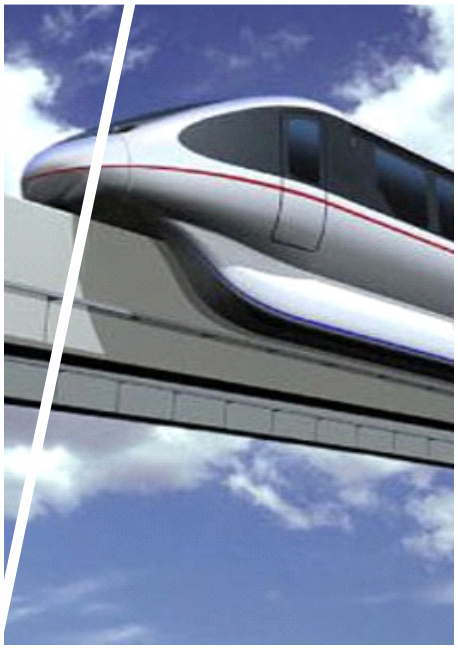
**Project Scheduling**

**Material Testing and Inspection**

**Quality Control and Construction Supervision**

**Cost and Budget Control**

**Total Project Management**



# Railway Experience

**Kuala Lumpur – Singapore High Speed Rail Project**

**Description** : With an approximate total length of 326 km, the HSR service will connect 7 major towns along its corridor: Bandar Malaysia, Putrajaya, Seremban, Ayer Keroh, Muar, Batu Pahat and Iskandar Puteri. The design speed is 350 kph and operating speed is 320 kph. Construction of the HSR is expected to commence in 2018 with completion slated for 2026.
**Services** : Reference Design Consultant 05 (RDC 05)
**Project Value** : *RM 63 bil (USD 15 bil)*

**ICE for KL Monorail RSV Bogie Replacement Program**

**Description** : Consist of 11 stations running 8.6 km with two parallel elevated tracks. It connects the Kuala Lumpur Sentral transport hub with the "Golden Triangle".
**Services** : Independent Checking Engineer (ICE)
**Project Value** : *RM14 mil (USD 4 mil)*

**Feasibility Study For Lines 2 & 3 of Klang Valley MASS RAPID Transit Project**

**Description** : Line 1 - Total length of 60.7km of which 11.15km is underground. There will be 40 stations.
Line 2 -Total length of 44.9km of which 16.1km is underground There will be 28 stations.
**Services** : Feasibility Study
**Project Value** : *RM 45 bil (USD 12.9 bil)*

**Proposed Extension of the KL Monorail line Consultancy services for Civil & Structural and Alignment Works for Feasibility Study Stage**

**Description** : Monorail services between KL Sentral and Taman OUG. The alignment is 8.8 km with 10 stations where Station 1 interchanges with existing KL Monorail, KTM Komuter, Kelana Jaya LRT Line and ERL while Station 3 interchanges with KTM Komuter and Station 10 interchanges with Kelana Jaya LRT.
**Services** : Consultancy Services & Feasibility Study
**Project Value** : *RM 1.5 bil (USD 0.4 mil)*

**Proposed Metro Project in Northern State**

**Description** : Consist of a 25 km long elevated Metro, with 25 stations, several Multi Storey Car Parks and 1 Depot which is required to stable, maintain and operate 44 light rail vehicles, which are of 4 car configurations
**Services** : Detailed Design & Consultancy Services
**Project Value** : *RM 14 bil (USD 4 bil)*

**Ampang (AMG) Line Extension Project Station 1 Mixed Development**

**Description** : Design & Supervision of Road/Infra works inclusive CBP Wall, Underpass, Bridge, RC Walls, Street Lighting, Drainage and Surface Car Parks
**Services** : Design & Supervision
**Project Value** : *RM 49.87 mil (USD 14.24 mil)*

**ICE services for KVMRTSungai Buloh - Serdang - Putrajaya Line (Line 2)**

**Description** : The SSP Line is 52.2 km long, with 38.7 km elevated and 13.5km underground. There will be a total 36 stations, out of 11 of them will be underground
**Services** : Independent Consultant Engineer (ICE)
**Project Value** : *RM 25 bil (USD 7.14 bil)*

**Riau Palm Oil Railway, Indonesia**

**Description** : Development of a 159km railway between Dumai Port and Pekan Baru in Sumatra, Indonesia, principally for the purpose of transportation of palm oil.
**Services** : Feasibility Study
**Project Value** : *RM4.5 bil (USD 1.2 bil)*

# Railway Experience

**ICE for KVMRT, Sungai Buloh – Kajang Line**

**Description** : HSSI appointed as the Independent Consultant Engineer (ICE) for the Klang Valley MRT (KVMRT) project from Sungai Buloh to Kajang. The KVMRT is 51km long of which 41.5km is elevated and 9.5km underground with a total of 31 stations of which 7 are underground, 2 depots and numerous Park & Ride Stations with driverless and fully automatic trains.

**Services** : Design review, construction oversight activities (tendering, quality and safety assurance and progress monitoring), check & balances and project completion

**Project Value** : *RM18 bil (USD 5.14 bil)*

**East Coast Rail Link (ECRL)**

**Description** : ECRL project and asset owner with China Communications Construction Company (CCCC) subsequently appointed as the Engineering, Procurement, Construction and Commissioning (EPCC) Contractor. The operation distance of the main line will be 524.6km and the travel duration for the fastest trains will be around four hours. It includes 22 stations (inc. 2 provisional), 6 spur lines (inc. 2 provisional) and interchange opportunities with the KLJ and KTM rail lines.

**Services** : Scheme Detailed Design & Construction Supervision. Preliminary Design Consultancy for the Engineering,Procurement, Construction & Commissioning

**Project Value** : *RM46 bil (USD 13 bil)*

**East Coast Rail Route, Malaysia**

**Description** : Rail route connecting all capitals and major towns in the East Coast Region to provide better connectivity and bridge the economic gap between the East and West coasts of Peninsula Malaysia. The route is approximately 545km in length, from Kuala Lumpur to Tumpat, Kelantan passing through Mentakab, Kuantan, Kertih, Kuala Terengganu and Kota Bharu. The meter gauge railway serves both freight and passenger and it runs on diesel traction with eighteen (18) passenger stations and four (4) freight stations.

**Services** : Feasibility Study

**Project Value** : *RM 29 bil (USD10 mil)*

**Twenty-four (24) Ampang Line Stations, Malaysia**

**Description** : Upgrading of the twenty-four (24) stations on the Ampang LRT line.

**Services** : Detailed Design and Consultancy Services.

**Project Value** : *RM 12 mil (USD 4 mil)*

**Ampang (AMG) LRT Line Extension, Malaysia**

**Description** : The Ampang Line extension is approximately 17.7km in length from the existing Sri Petaling station to the integrated terminal station at Putra Heights, where both the Ampang and Kelana Jaya Line Extensions meet to provide a continuous network of LRT lines. A total of 13 stations, including 2 future stations, will be provided. A depot to stable and maintain 20 nos of 6 car trains is also being built under this project. The LRT is standard gauge and it will be driverless and fully automatic.

**Services** : Detailed Design & Consultancy Services

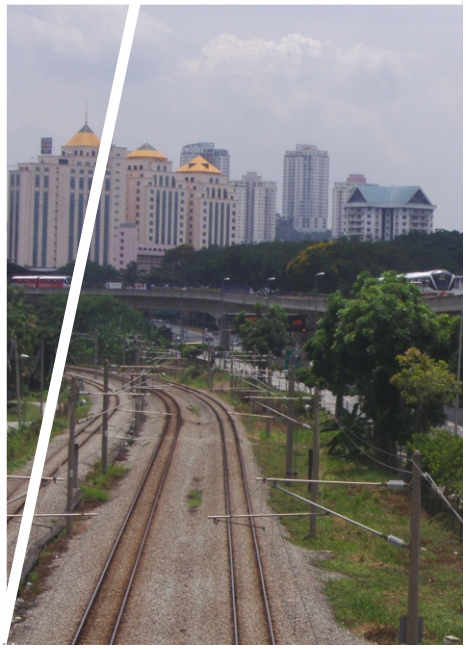
**Project Value** : *RM 3.4 bil (USD 1 bil)*

**Proposed Hanoi Monorail Project, Vietnam**

**Description** : A technical and financial study of the 51km proposed monorail system in Hanoi City Centre

**Services** : Feasibility Study

**Project Value** : *RM 1.7 bil (USD 0.5 bil)*

# Railway Experience

**Structural Assessment and Conditioning Monitoring for Kelana Jaya LRT Line**

**Description** : The structural assessment and condition monitoring for Kelana Jaya LRT (PUTRA LRT) line.
**Services** : Detailed design & Construction supervision
**Project Value** : *RM108 mil (USD 31 mil)*

**Electrified Double Tracking, Ipoh to Padang Besar, Malaysia**

**Description** : Design of nine (9) numbers Road Over Railway Bridges. The scope includes the road geometric, junction, bridge, approach pile embankments/stone columns, geotechnical, hydrology, drainage, road working and road furniture, design of electrical, installations, namely traffic signal and street lighting.
**Services** : Detailed design
**Project Value** : *RM108 mil (USD 31 mil)*

**Extension of STAR and PUTRA LRT Lines**

**Description** : Feasibility studies for the Ampang Line Extension between the existing Sri Petaling Station and Putra Heights and the Kelana Line Extension between existing Kelana Jaya Station and Putra Heights. A total of approximately 13 alignment options was considered for each of the Line Extensions. The scope of the feasibility studies included engineering, systems, transportation, landuse, socio-economic, environmental, economic and financial.
**Services** : Feasibility Study
**Project Value** : *RM 29 bil (USD10 mil)*

**Penang LRT/Monorail System, Malaysia**

**Description** : HSS were appointed by Penang Port Sdn Bhd as Consultant to undertake the pre-feasibility study of the Proposed Penang LRT/Monorail with a time frame of six months up to the submission of the Draft Final Report.
**Services** : Feasibility Study
**Project Value** : *RM 3 bil (USD 0.85 mil)*

**Electrified Double Tracking, Seremban to Johor, Malaysia**

**Description** : The 295km of rail between Seremban and Johor comprised over 700 track km of rail, 130 nos. road over railway bridges and 25 nos. stations/halts
**Services** : Preliminary Engineering Design
**Project Value** : *RM 4.5 bil (USD 1.3 mil)*

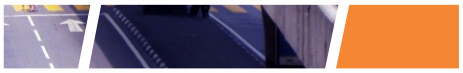
**Electrified Double Tracking, Gemas to Kluang, Malaysia**

**Description** : Upgrading of the railway infrastructure including electrification, signalling and communications between Gemas & Kluang which included 109km of double track alignment, 18 nos. river bridges, 30 nos. road over railway bridges, 5 nos. stations yards and 3 nos. halts.
**Services** : Detailed Design
**Project Value** : *RM 14 mil (USD 4 mil)*

**Electrified Double Tracking, Rawang to Ipoh, Malaysia**

**Description** : Electrification of approximately 178km of railway line between Rawang and Ipoh which included 400 track km of railway track, 18 nos. stations/halts, 78 nos. railway bridges, 20 nos. road over rail bridges and over 300 culverts.
**Services** : Project Management
**Project Value** : *RM 2.6 bil (USD 0.7 bil)*






# Railway Experience

**Rail Link to Tanjung Pelepas Port**

**Description** : Detailed Design, construction, testing, commissioning and guarantee of a rail link between Senai and Kempas baru to Tanjung Pelepas port.
**Services** : Detailed design & Construction supervision
**Project Value** : *RM430 mil (USD 123 mil)*

**Express Rail Link (ERL)**

**Description** : Assisted in the management and implementation of the 50kmExpress Rail Link project from Kuala Lumpur City Centr to KLIA
**Services** : Project Management
**Project Value** : *RM 1.5 bil (USD 430 mil)*

**ERL, Check-in/Check-out of Rail/Air Intermodality Facilities**

**Description** : Appointed to define and appraise the concept of rail/air intermodality for the ERL of 30 min, 56km intermodality from KL City Centre to KLIA which will enable passengers to check-in and check-out at the KL Sentral Station.
**Services** : *Feasibility Study*
**Project Value** : *RM 120 mil (USD 34.4 mil)*

**LRT System 2**

**Description** : Engaged as Lead Consultant by Putra Berhad for the 29km Putra LRT Section 1 from Subang to Pasar Seni (14.1km) and Section 2 from Pasar Seni to Gombak (14.9km).
**Services** : Project Management
**Project Value** : *RM 1.8 bil (USD 0.5 bil)*

**LRT System 2, Kerinchi to Pasar Seni**

**Description** : Engaged as the Detailed Design Consultant for the elevated viaduct of 14.1km long.
**Services** : Detailed Design
**Project Value** : *RM 360 mil (USD 103 mil)*

**Kuala Lumpur Light Rapid Transit Study**

**Description** : Analyis of the ridership levels, station to station matrices modal split and travel time as this line were analysed. The size and location of the stations was also undertaken.
**Services** : Ridership study and financial revenue analysis
**Project Value** : RM 430 mil (USD 123 mil)

**Malayan Railway Double Tracking (Package A,B & C)**

**Description** : Design of 53 bridges to accommodate high axle load up to 20T and maximum speed of 120km/hr.
**Services** : Detailed Design
**Project Value** : *RM 73 mil (USD 21 mil)*

**Seven-Over-Railway Crossing**

**Description** : Construction of road-over-railway crossing and grade separated interchange at four locations. The project was port of the interpreted scheme for upgrading the then single railway tracking.
**Services** : Detailed Design
**Project Value** : *RM 70 mil (USD 20 mil)*

ENGINEERS

# HSS ENGINEERS BERHAD

**HEB Group comprises the following companies:**

**HSS Engineers Berhad (1128564-U)**
**HSS Engineering Sdn. Bhd. (450753-X)**
**SMHB Engineering Sdn Bhd (167729-A)**
**BIM Global Ventures Sdn. Bhd. (1008362-V)**
**HSS BIM Solutions Pvt. Ltd. (incorporated in India)(U74900TN2012PTC086741)**
**SMHB Environmental Sdn. Bhd. (258815-X)**

**Our associated companies held through HSS Engineering Sdn Bhd are as follows:**

**HSS Integrated Sdn. Bhd. (173262-T)**
**HSS Mekanikal & Elektrikal Sdn. Bhd. (228667-K)**

**The associated company held through SMHB Engineering Sdn Bhd is as follows:**

**SMHB Sdn. Bhd. (63281-X)**

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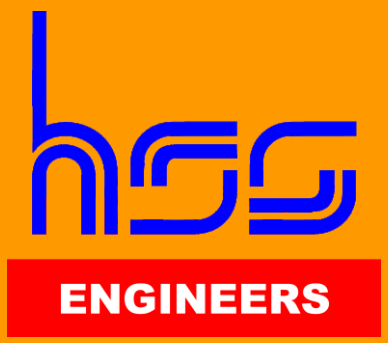


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