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MALAYSIA PRODUCTIVITY CORPORATION (MPC)

PROPOSED RECTIFICATION AND REFURBISHMENT WORKS TO GRAPHIC ROOM (BLOK INOVASI) AT MALAYSIAN PRODUCTIVITY CORPORATION (MPC), PETALING JAYA, SELANGOR DARUL EHSAN

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DESIGN STAGE 1 REPORT

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1. INTRODUCTION

1.1 Project Background

The methodology is centered upon key tasks that identify the principal facets of the scope of work, matching an efficient delineation and sequence of the work programme. These key tasks are then applied throughout the Project to define the work content. Close attention has been given to the following inter-related factors:

- a) The schedules and time required for the data collection and site investigations and the importance of developing optimized logistics to collect adequate information to ensure that the data and parameters can be confidently established.
- b) The high priority will be given to make sure that the structure works to be well planned in order to enable smooth progression of work during design and construction. The structure works must be safely blended with the existing services and utilities if any.
- c) The need to closely coordinate and integrate inputs from the various disciplines involved.

The following sections describe the technical approach and methodology to the main components of the Project following closely to the Scope of Services and are concentrated on the main facets of the Project, which have the greatest impact on achieving the overall objectives of the Project. Every component receives similar careful consideration during its investigations, option development and assessment, engineering design, costing and tender documentation. The consultancy services are logically divided into five stages of work matching both the scope of services and programme, as illustrated in the next page.

A Work Programme has been compiled to show the timing of each of the stages as shown below.

Stage 1:	Preliminary Stage (Pre-Engineering & Site Layout Optimization Studies
Stage 2:	Design Stage 1
Stage 3:	Design Stage 2
Stage 4:	Final Tender Documents

1.2 Site Layout Planning and Optimization Study

All information provided including layout, existing drawing by client together with information obtained from site visit are reviewed. Figure 1 is the satellite view of proposed site while Figure 2 is the current condition of the proposed site.



Figure 1: Satellite View of the Site

1.3 Scope of Works

The services included the preparing of specification & all other technical services necessary to produce comprehensive on structural engineering drawings and other documents ready to be used for the tender and construction purposes.

1.4 Site Visits and Meetings

Site visits were held to gain intimate knowledge of the site condition and to gather as much information as possible about the local environments and constraints. A significant amount of useful information was obtained, and this has a strong bearing on the solution adopted. Based on our experience in other similar projects and using the information obtained, a prudent approach will be adopted when choosing the technical solutions. The information outlined in this proposal represents general overview of the methodology for successful implementation

of the project.

1.5 Design Works

All activities will comply with the objectives as stated in the JKR's Requirements. The design involves the followings:

- i) Studying existing data.
- ii) Collection of site data such as water sample.
- iii) The design must fulfil the JKR's requirements, safety and aesthetic.
- iv) The Project shall be designed economically and shall be constructed to good engineering practice.
- v) The guidelines on environmental are to be followed to minimize the detrimental effects due to construction activities of the Project such as noise, vibration and water.

1.6 Construction Works

The construction activities will involve the following considerations:

- i) Interfacing and liaison with all relevant agencies for incorporation of work activities related to all items.
- ii) Major items of the materials are to be supplied by the Suppliers, requiring very close liaison for quality, quantity and schedule of supply related.
- iii) Similarly, the relocation of public utilities will require very close interfacing with local authorities and utilities providers.
- iv) Use of adequate resources like materials, machineries and plants, skilled and experience staff and Contractors, to achieve target completion date.
- v) Supervision and monitoring of the 'Works', testing of the materials and workmanships and maintenance of finished works up to the Maintenance Period to ensure compliance to the specifications.
- vi) Maintain safety at worksite; minimise disruption to operation and adherence to environmental requirements.
- vii) Documentation and reporting of progress of works.
- viii) Commissioning of the works.
- ix) Maintenance Program of the completed works.

1.7 Safety Plan

The Consultants and Contractor will monitor and ensure that the requirements of the following codes are met: -

- i) Malaysia Occupational Safety and Health Act (OSHA) 1994
- ii) Malaysian Standard Code of Practice for Safety and Health of Work
- iii) Malaysian Standard MS 426 (1976) Code of Practice for General Principles for Safe Working in Industry
- iv) Malaysian Standard MS 949: Code of Practice for Safety in Welding and Cutting
- v) Occupational Safety and Health Administration (OSHA) regulations
- vi) Factories and Machinery Act, 1967 (Act 139) & Regulations and Rules
- vii) Environmental Quality Act 1974; and all subsidiary legislation made hereunder

The Contractor shall establish the safety framework for the Project which shall include requirements of all relevant parties in the project in aspects encompassing workplace health and safety and construction safety. The Contractor will develop a Safety Plan for the Project which will outline safety and health requirements to all employees and contractors undertaking contracting works at project sites. This manual takes cognizance of the requirements of relevant legislation relating to safety, health and the environment. It sets forth acceptable safety practices to be adhered to and safety instructions to be followed by all project members.

The content of this Safety Plan shall be periodically reviewed and updated in accordance with JKR requirements and current legislation issued from time to time by the relevant authorities. The Consultants shall ensure that its contractors develop and obtain an approved Safety Plan prior to commencing any aspect of the construction works. The Safety Plan will set down as to how they will comply with all statutory regulations and good industry safety practices in undertaking those aspects of the works. The Contractor's aim will be to ensure the safety risks that will occur during the project will be minimized and that the project has a good safety record.

The Safety Plan will incorporate the following strategies:

- i) The appointment of a Safety Supervisor who will assist the project management in the implementation of the Safety Plan and promotion of Safety awareness throughout the project period.
- ii) Review and monitor the Contractors' safety performance for adherence to the approved Safety Plan. To this end, the Contractor will ensure that any infringements

of the above-mentioned laws, regulations and safe operating standards shall be promptly remedied at the Contractors expense.

- iii) Carry out reviews to ensure that the Project Systems and equipment provided are safe and fit for use. To this end the Contractors will be required to provide evidence that their equipment conforms to the Manufacturers Specifications.
- iv) Carry out independent audits of the Works, at intervals stated in the Safety Plan, to ensure that the Contractors protect the health and safety of workers and people living or working near construction activity from potential hazards created by the activity. Our Safety Supervisor shall have the capability and authority to advice on safe working practices.
- v) Carry out independent audits of the Works to ensure that the Contractors take due cognizance of all environmental issues and comply with all laws, by-laws, rules and regulations relating to the environment. This shall include but not be limited to avoiding unnecessary felling of trees, proper discharge of effluent, dust control, emission of noise, fumes, waste, toxic or otherwise including the construction of receptacles, incinerators, silt traps, filters and other appropriate methods of disposal or discharge.
- vi) Monitor and ensure that the Contractors take all necessary precautions to protect the public and minimize the disturbance and inconvenience to the public resulting from performance of the Work and maintenance of the project.
- vii) Ensure that the Contractors comply with all the regulations as to the placing of traffic signals, flares, barricades, flags, and other warning signs during the performance of the Work and the maintenance of the project.
- viii) From a safety and socio-economic point of view, the Contractor will always ensure that to maintain, good public relations with its personnel and local population. The Contractor will promptly take such steps as necessary to ensure maintenance of such good relations to the extent that such requirement is consistent with sound business practice.
- ix) The Consultants and Contractor will ensure that to take necessary precautions to avoid damage to underground or above ground structures and that indemnify JKR against all actions, damages, claims and demand in connection therewith.
- x) The Consultants and Contractor will ensure that to provide JKR access at any time to the plant, equipment, personnel and records when requested, to enable JKR to inspect or audit any aspect of their operations relevant to safety and the work environment.

1.8 Construction & Site Supervision Works

The construction activities will involve the following considerations:

- i) Interfacing and liaison with all relevant agencies for incorporation of work activities related to all items.
- ii) Major items of the materials are to be supplied by the Suppliers, requiring very close liaison for quality, quantity and schedule of supply related.
- iii) Use of adequate resources like materials, machineries and plants, skilled and experience staff and Contractors, to achieve target completion date.
- iv) Supervision and monitoring of the 'Works', testing of the materials and workmanships and maintenance of finished works up to the Maintenance Period to ensure compliance to the specifications.
- v) Maintain safety at worksite; minimise disruption to operation and adherence to environmental requirements.
- vi) Documentation and reporting of progress of works.
- vii) Commissioning of the works.
- viii) Maintenance Program of the completed works.

1.9 Testing and Commissioning

Acceptance of the project culminates in successful testing and commissioning of the works. The procedure for the commissioning tests has been covered in the special provisions to conditions of contract. Issue of the 'Certificate of practical completion' will depend on the successful completion of the commissioning tests. The Contractor will submit notice to Client in advance for the tests. The tests will commence on such days as the Client will notify the Contractor after the date specified in the Contractor's notice. Test reports will be provided by the Contractor to the Client in accordance with the Contract Documents. The procedure for the commissioning tests will be deliberated and agreed upon before the notice for commissioning tests is submitted. The commissioning tests will apply for sectional completion/partial occupation, as related to issue of practical completion/partial occupation; therefore, the arrangement will need close liaison and interfacing with other works.

1.10 Maintenance Period

The need for maintenance of the works is highlighted in the JKR's requirements. The Contractor will provide maintenance services for the works, for a period of as stated in agreement or BQ after the issue of Certificate of practical completion or partial occupation as the case may be. The Contractor will arrange maintenance of all the works executed.

(a). Maintenance Manual

The Contractor will be involved in all aspects of commissioning and testing of the installed system. The Contractor will be responsible for maintenance and upkeep according to the contract specified. The approved maintenance manual will govern maintenance of the newly built project. The Contractor will prepare the maintenance manual for the works as required. Step by step description of all maintenance aspects will be written down in the manual such that it can be understood and implemented easily. The maintenance manual will cover the operation of newly constructed plant, structures, buildings and the utilities.

1.11 Consultant Quality Objective

The Consultant is committed to providing a quality service in the management and construction to fulfil this commitment, The Consultants shall adopt the following core objectives:-

- i) To establish and implement a documented Quality Management System based upon ISO 9000.
- ii) To provide a quality service and product to our client.
- iii) To meet all contractual and statutory obligations.
- iv) To be aware of and to satisfy our social and environmental obligations.
- v) To promote quality awareness and value throughout all our staff, subcontractors and suppliers.
- vi) To regularly review and improve our Quality Management System to ensure that it continues to fully meet the project requirements.

1.12 Management Function

The functions, responsibilities and reporting routes of Contractor project personnel are defined in the following documents: -

- i) The Project Organization Chart.
- ii) Job specifications for personnel.
- iii) Management and Work Procedures.

The above documents will be periodically reviewed and updated as necessary. The Consultants will identify and provide adequate resources and provide suitably trained and experienced personnel to manage and monitor the works.

1.13 Contract Review

Each Work Package will be reviewed to ensure.

- i) That all requirements are adequately defined and documented
- ii) That there is no conflict between documents such as bills of quantities, specifications and drawings.

Each Contracted Work will be reviewed to ensure

- i) That any differences between Contracted Work requirements and those at tender stage are resolved.
- ii) That the contractor has the resources and capability to meet Contract requirements.

Records of all reviews will be kept.

2. STRUCTURAL DESIGN BRIEF

2.1 General

Criteria to arrive at optimum structural systems are as follows:

- a) To suit the site conditions
- b) The structural integrity
- c) Technically efficient system
- d) Buildability to minimize construction cost and time
- e) Compliances with Local Authorities Requirements and Codes of Practices
- f) Optimum and aesthetically acceptable to Architectural requirements

2.2 Structural Standard and Codes of Practice

Table 1: Typical Codes, Standards and Specifications to be adopted in this project

No.	Code No.	Description
EUROCODE		
1.	EN 1990	Basis of Structural Design
2.	EN 1991	Eurocode 1: Actions on Structures
3.	EN 1992	Eurocode 2: Design of Concrete Structures
4.	EN 1993	Eurocode 3: Design of Steel Structures
5.	EN 1994	Eurocode 4: Design of Composite Steel and Concrete Structures
6.	EN 1995	Eurocode 5: Design of Timber Structures
7.	EN 1996	Eurocode 6: Design of Masonry Structures
8.	EN 1997	Eurocode 7: Geotechnical Design
9.	EN 1998	Eurocode 8: Design of Structures for Earthquake Resistance
10.	EN 1999	Eurocode 9: Design of Aluminum Structures
MALAYSIAN STANDARD		

1.		The latest Uniform Building By-laws of Malaysia (UBBL)
2.	MS 544	Code of Practice for the Structural Use of Timber
3.	MS 1195	Code of Practice for Structural Use of Concrete
4.	MS 523	Specification for Concrete Including Ready-Mixed Concrete
5.	MS 145	Steel Fabric for the Reinforcement of Concrete
6.	MS 146	Specification for Hot Rolled Steel Bars for the Reinforcement of Concrete.
7.	MS 1553	Code of Practice on Wind Loading for Building Structure
8.	MS 1064	Guide to Modular Coordination in Buildings
MALAYSIAN STANDARD (MS) on EUROCODE		
1	MS EN 1990:2010 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode – Basis Of Structure Design
2	MS EN 1990:2010	Eurocode – Basis Of Structure Design
3	MS EN 1991-1-1:2010 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode 1: Action On Structures – Part 1-1: General Actions – Densities, Self-Weight, Imposed Loads For Buildings
4	MS EN 1991-1-4:2017	Eurocode 1: Action On Structures – Part 1-1: General Actions – Densities, Self-weight, Imposed Loads for Buildings
5	MS EN 1991-1-4:2017	Eurocode 1: Action On Structures – Part 1-4: General Actions – Wind Actions
6	MS EN 1992-1-1:2010 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode 2: Design of Concrete Structures – Part 1-1: General Rules And Rules For Buildings
7	MS EN 1992-1-1:2010	Eurocode 2: Design Of Concrete Structures – Part 1-1: General Rules And Rules For Buildings
8	MS EN 1993-1-1:2010 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode 3: Design Of Steel Structures – Part 1-1: General Rules And Rules For Buildings
9	MS EN 1993-5:2017 (NATIONAL ANNEX:2018)	Malaysia National Annex to MS EN 1993-5:2017, Eurocode 3: Design Of Steel Structures – Part 5: Piling



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PETALING JAYA, SELANGOR



10	MS EN 1993-1-1:2010	Eurocode 3: Design Of Steel Structures – Part 1-1: General Rules And Rules For Building
11	MS EN 1993-1-8:2017	Eurocode 3: Design Of Steel Structures – Part 1-8: Design Of Joints
12	MS EN 1993-5:2017	Eurocode 3: Design Of Steel Structures – Part 5: Piling
13	MS EN 1997-2:2016 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode 7: Geotechnical Design – Part 2: Ground Investigation And Testing
14	MS EN 1997-1:2012 (NATIONAL ANNEX)	Malaysia National Annex To Eurocode 7: Geotechnical Designs – Part 1: General Rules
15	MS EN 1997-2:2015	Eurocode 7: Geotechnical Design – Part 2: Ground Investigation And Testing
16	MS EN 1997-1:2012	Eurocode 7: Geotechnical Design – Part 1: General Rules
17	MS EN 1998-1:2015	Eurocode 8: Design Of Structures For Earthquake Resistance – Part 1: General Rules, Seismic Actions And Rules For Buildings
18	MS EN 1998-1:2015 (NATIONAL ANNEX:2017)	Malaysia National Annex To Eurocode 8: Design Of Structures For Earthquake Resistance – Part 1: General Rules, Seismic Actions And Rules For Buildings
	STANDARD JKR'S SPECIFICATIONS	
	Standard JKR's Specifications as follows: JKR Standard Specification for Building Works 2014, JKR Standard Specification for Roadwork (JKR/SPJ/2008), JKR Standard Specification for Structural Steel Work (JKR 200600-0019-99), Standard Specification for Prefabricated Timber Roof Trusses (JKR-20601-0190-12), and Standard Specification for Cold Formed Roof Trusses (JKR 20601-0186-2011).	

2.2 Design Basis

The structural works shall be designed based on the following basis. Characteristic compressive strength of concrete at 28 days shall be minimum: -

Table 2: Concrete Grade

No.	Description	Compressive Strength, (Cylinder/Cube) (N/mm ²)
1.	All cast in-situ reinforced concrete structure element: pile cap, stump, column, beam, slab, topping, shear walls etc.	C30/37 C28/35

(b) Reinforcement

Table 3: Specified Characteristic Strength, fyk (N/mm²)

No.	Description	Specified Characteristic Strength, fyk (N/mm ²)
1.	Hot Rolled High Yield steel	500
2.	Wire mesh	485

(c) Fire Resistance

The limits of compartmentation and minimum periods of fire resistance for structural elements of the building shall comply with the Ninth Schedule (Purpose Group IV (Office)) of the Uniform Building By-Law 213 (UBBL), and other regulations and requirements of the

Approving Authority. The super-structure elements, cover, and other design detailing shall be designed to cater for a minimum 2 hours period of fire resistance. The structural elements for the basement and structures below ground floor including its soffit shall be designed in

accordance with the permissible maximum dimensions for floor area and to cater for a minimum period of 2 hours fire resistance.

(d) Concrete Cover

Concrete Cover (Cast In-situ)	
Super-structures:	
(i). SLAB	= 45mm
*Exposure Condition (XC3)	

(e) Design Loading

All structures shall be designed for the worst combination of loadings and additional loads, if any. All loads shall be combined in the most unfavourable way for design of structural member and for stability check of the whole structure.

(f). Dead Loads and Live Loads

In general, **minimum** floor loadings for building shall be used in accordance with BS EN 1991-1.

(g). Dead Load

Design calculation:

- i. Brickwall 100mm + 20mm Thk both side Plaster = 2.78 kN/m²
- ii. 50mm Thk. Screed = 1.2 kN/m² *
- iii. Tiles (0.15mm Thk.) = 0.15 kN/m² (Estimated-pending info from Architect)

* References-Fiona Cobb 3rd Edition Structural Engineer's Pocket Book Page 97 Action on Structures Typical unit floor and roof loadings

3. SUMMARY OF DESIGN FOR BQ

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)

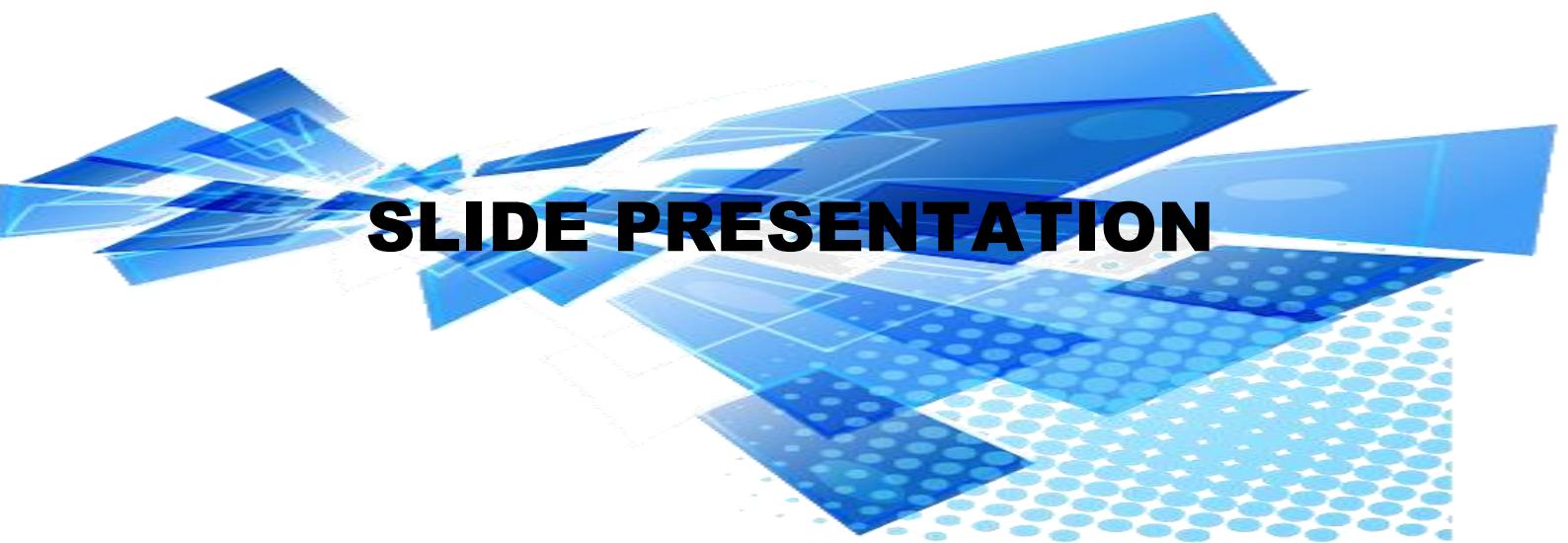
ITEM	ELEMENTS	PAGE	Original
			Description of works
A	NOTES & PREAMBLES	BILL 2/1/2	
B	PRELIMINARIES	BILL 3/1/1	Insurances, protection of materials, protection of existing building, As-built drwgs, site cleanliness, warranty
C	INJECTION WORKS	BILL 4/1/1	Small + Big room + extra allowance
D	HACKING & DEMOLITION WORKS	BILL 5/1/1	Wall, vinyl floor, all area of floor, doors, sink, cabinet ceiling
E	CONCRETE WORKS	BILL 6/1/1	All floor area:- Concrete test, BRC A10, concrete admixture, DPM to floor and wall & waterstop
F	FINISHING WORKS	BILL 7/1/1	All floor area:- Screeding, tiles & skirting, plaster & paint, mineral fiber ceiling & painting
G	DOOR	BILL 8/1/1	Nyatoh plywood timber door with paint & ironmongerries
H	MECHANICAL & ELECTRICAL WORKS	BILL 9/1/1	1 new airconditioning w ducting, 2 nos exhaust fan system, 25 nos light fittings & testing



PROPOSED RECTIFICATION AND REFURBISHMENT WORKS TO
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SLIDE PRESENTATION

A large, abstract graphic in the background consists of several overlapping blue rectangles of varying shades and opacities. Some rectangles have a subtle grid or dot pattern. The overall effect is a modern, digital, and dynamic look.

A presentation for: MALAYSIA PRODUCTIVITY CORPORATION (MPC) - GRAPHIC ROOM

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM,& STRUKTUR DI BANGUNAN IBU PEJABAT MPC (BLOK INOVASI) PETALING JAYA.

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1
ENGINEERING
CONSULTANCY



2
TURNKEY EPCIC
LATE LIFE, MATURE,
MARGINAL FIELD
DEVELOPMENT



3
PRODUCTION
OPERATION &
MAINTENANCE



4
FPSO/
ASSET LEASING



5
TRANSPORTATION
& INSTALLATION



6
RENEWABLE
ENERGY



7
CIVIL &
STRUCTURAL
DEVELOPMENT



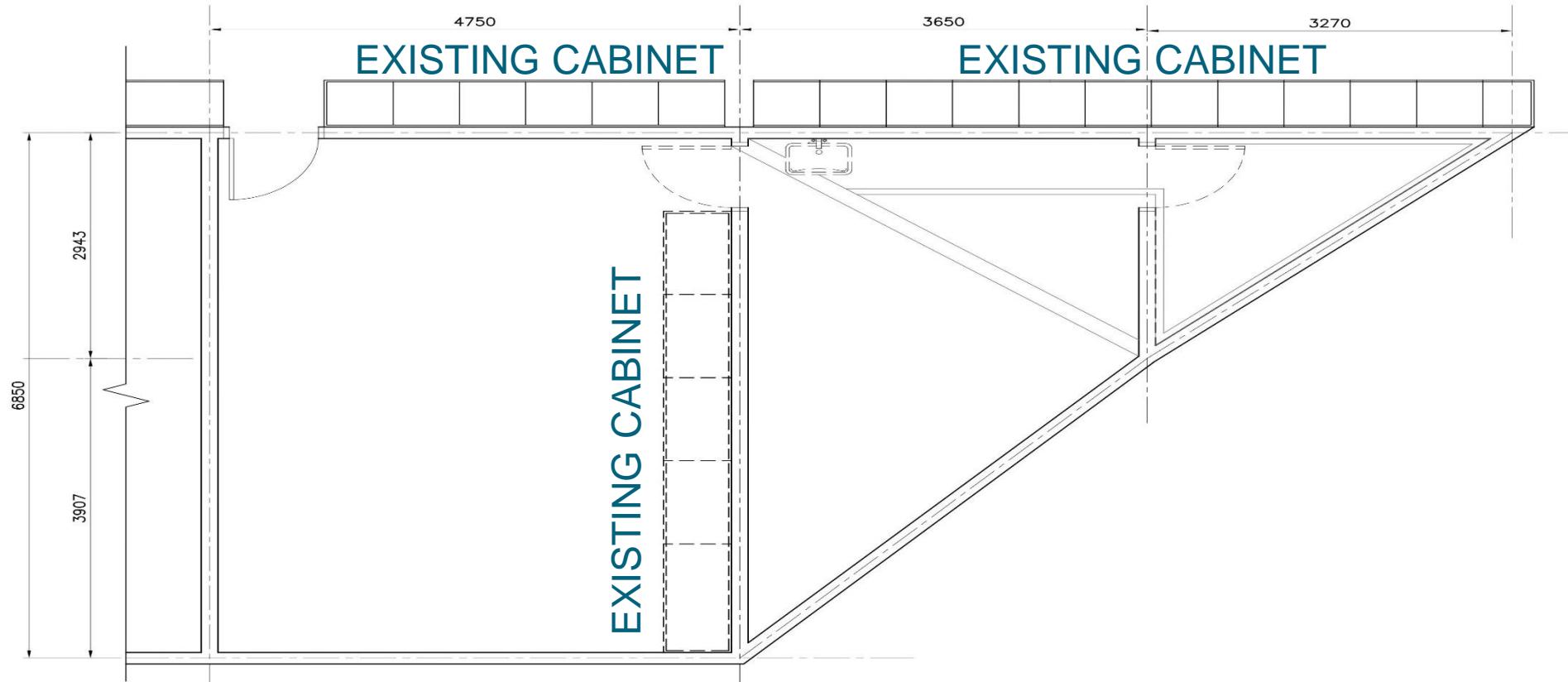
8
DEFENCE SOLUTION,
NAVAL ARCH & MARINE
ENGINEERING
(MRO)

PRESENTATION OUTLINE:

- Introduction
- Scope of Work
- Water Sample and Result
- Solutions and Preliminary Drawings
- Cost Estimation
- BIM Proposal Graphic Room Area

INTRODUCTION

EXISTING GRAPHIC ROOM LAYOUT PLAN



GRAPHIC ROOM LAYOUT PLAN

SCOPE OF WORK

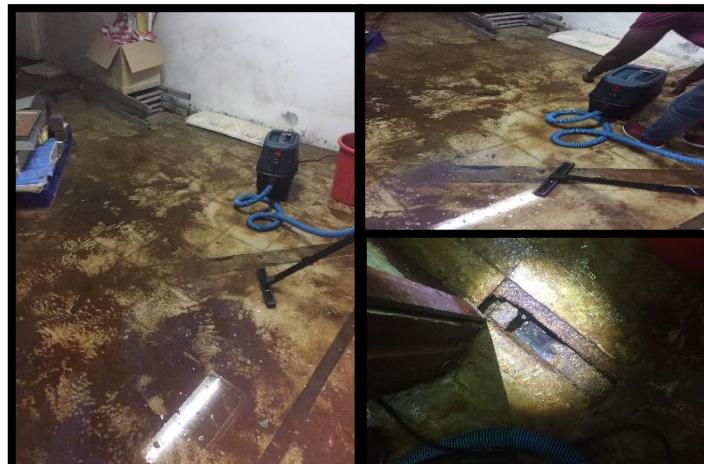
- Prepared the rectification work proposal report.
- Prepared BQ for rectification work in Graphic room
- Monitoring rectification work until complete.

PROBLEM STATEMENT

- ✓ There is water stagnant and unknown the source of water in this room.
- ✓ It have small scupper drain around the smallest room and small pipe in the scupper drain. It possibility to flow out the water outside the room.



Shown that the water stagnant in the smallest room and scupper drain.



Stagnant water before sucking the water using water vacuum.

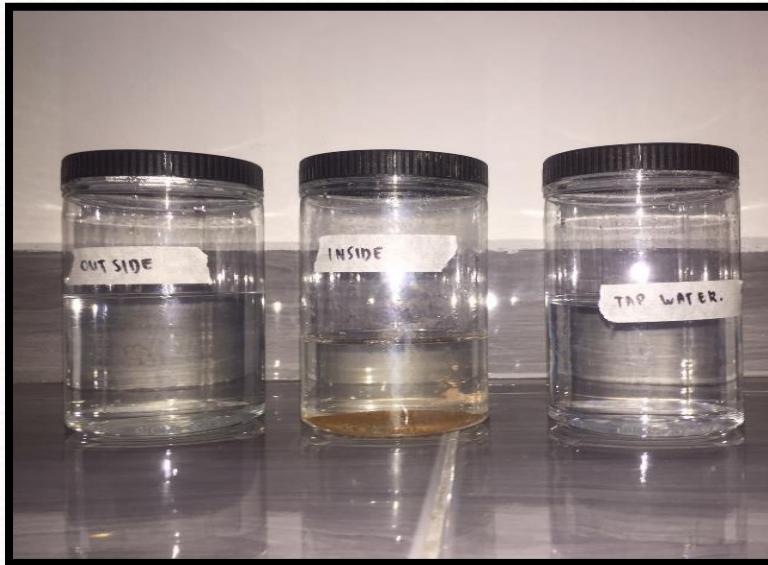


Shown that the small pipe in the scupper drain.



Discharge out flow of water inside the room and shows that the final discharge is dry.

WATER SAMPLE AND RESULT



Description of water sample;

OUTSIDE : Sample of water leakage near the entrance and sheet pile.

INSIDE : Sample of water stagnant inside the room.

TAP WATER : Sample of water tap in the room.

AFTER : The sample after sucking out the water.

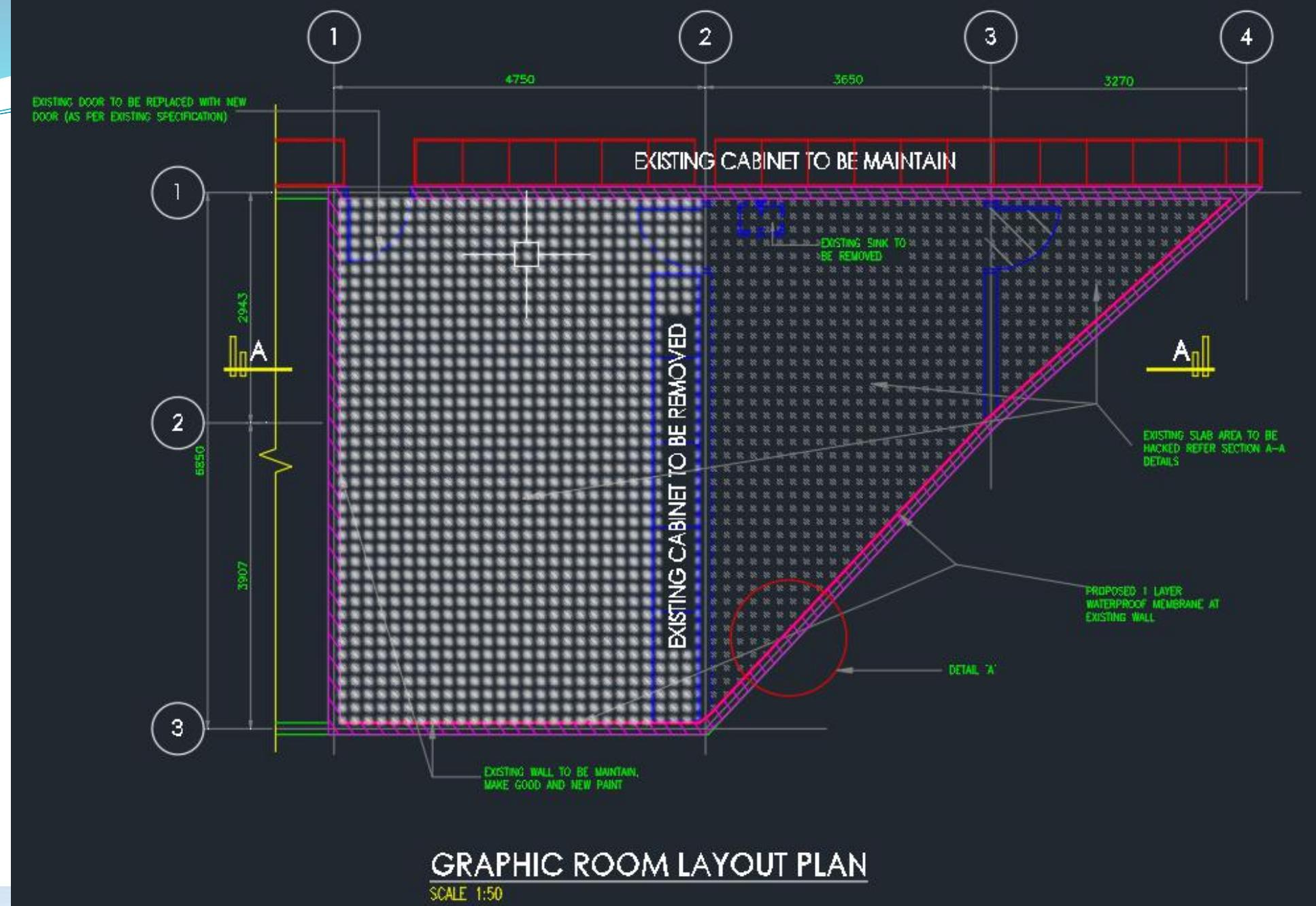
Water Quality Parameters (unit)	SAMPLE WATER			
	INSIDE	OUTSIDE	TAP-WATER	AFTER
pH	7.59	7.54	7.05	7.19
Temperature	27.7	27.4	27.5	28.3
Electric Conductivity ($\mu\text{s}/\text{cm}$)	267.3	142.5	155.45	445
DO (mg/L)	3.09	3.36	3.41	3.59
Turbidity (NTU)	14.76	1.04	0.11	141
Free Chlorine (mg/L)	0.33	0.48	0.4	0.65
Ammonia , $\text{NH}_3\text{-N}$ (mg/L)	0.23	0.01	0.59	0.86

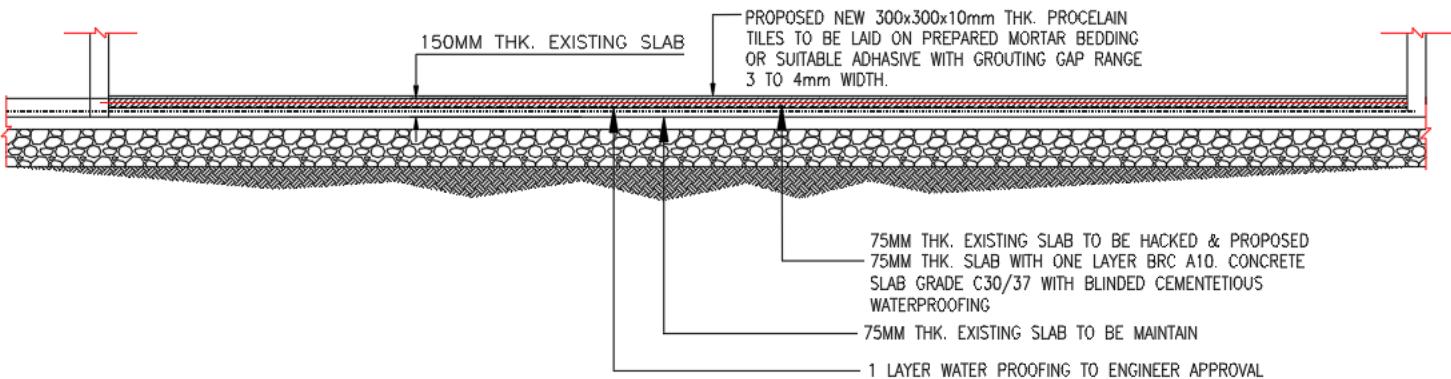
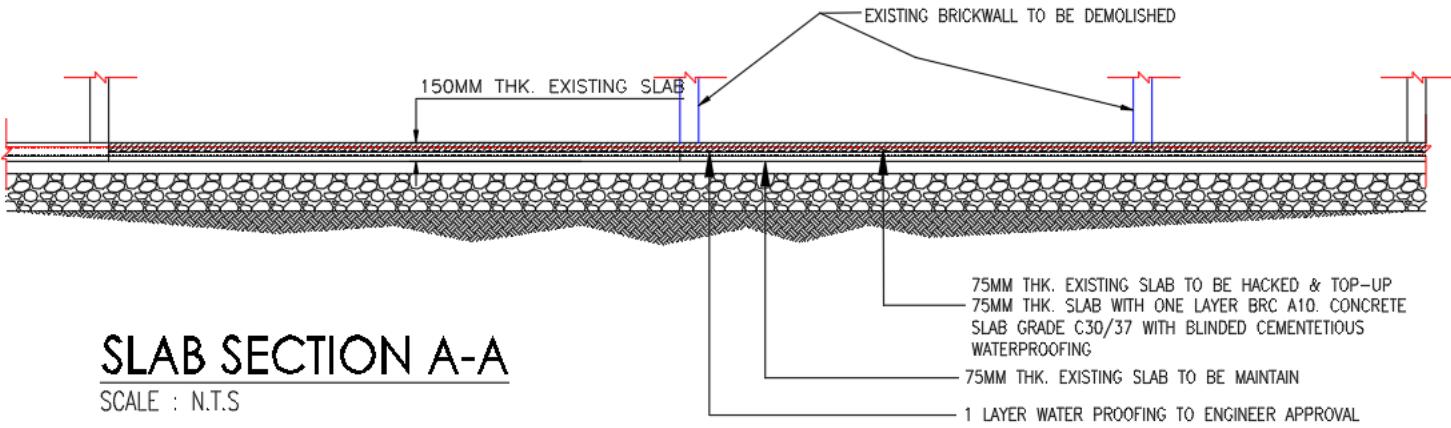
Based on the Laboratory Result shows that the all water sample consists of Chlorine. Means that the water stagnant in the room more probability are from tap water sources. Maybe it has leakage in certain area.

SOLUTIONS AND PRELIMINARY DRAWING

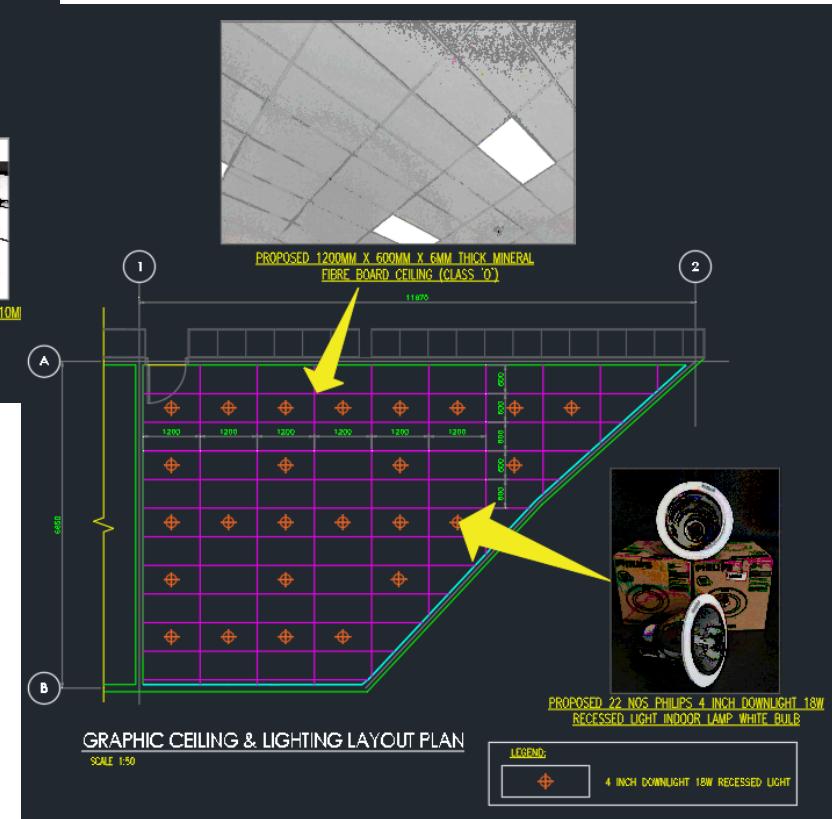
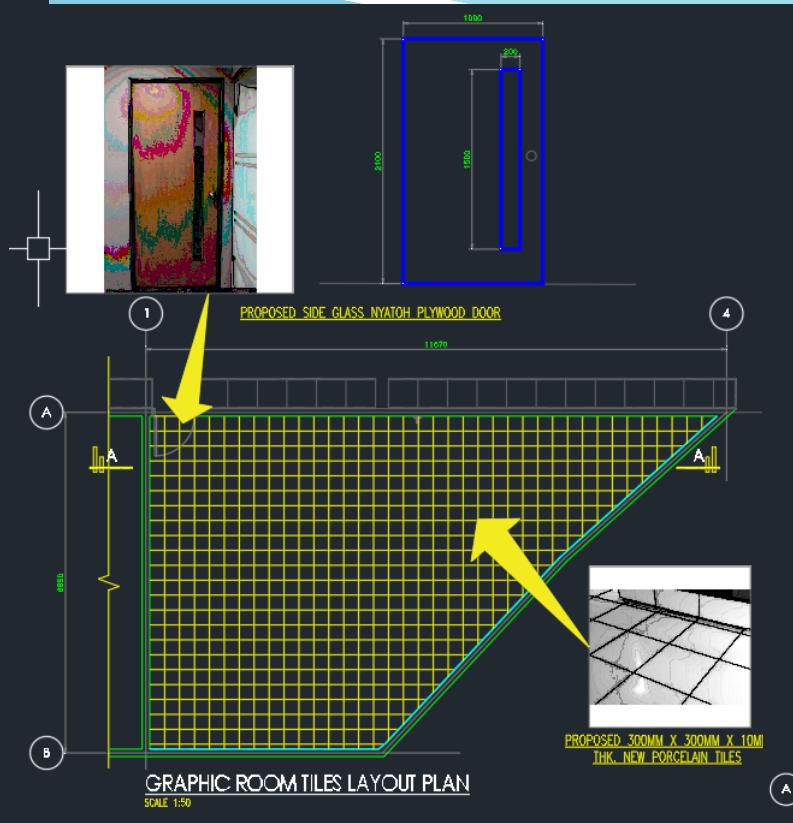
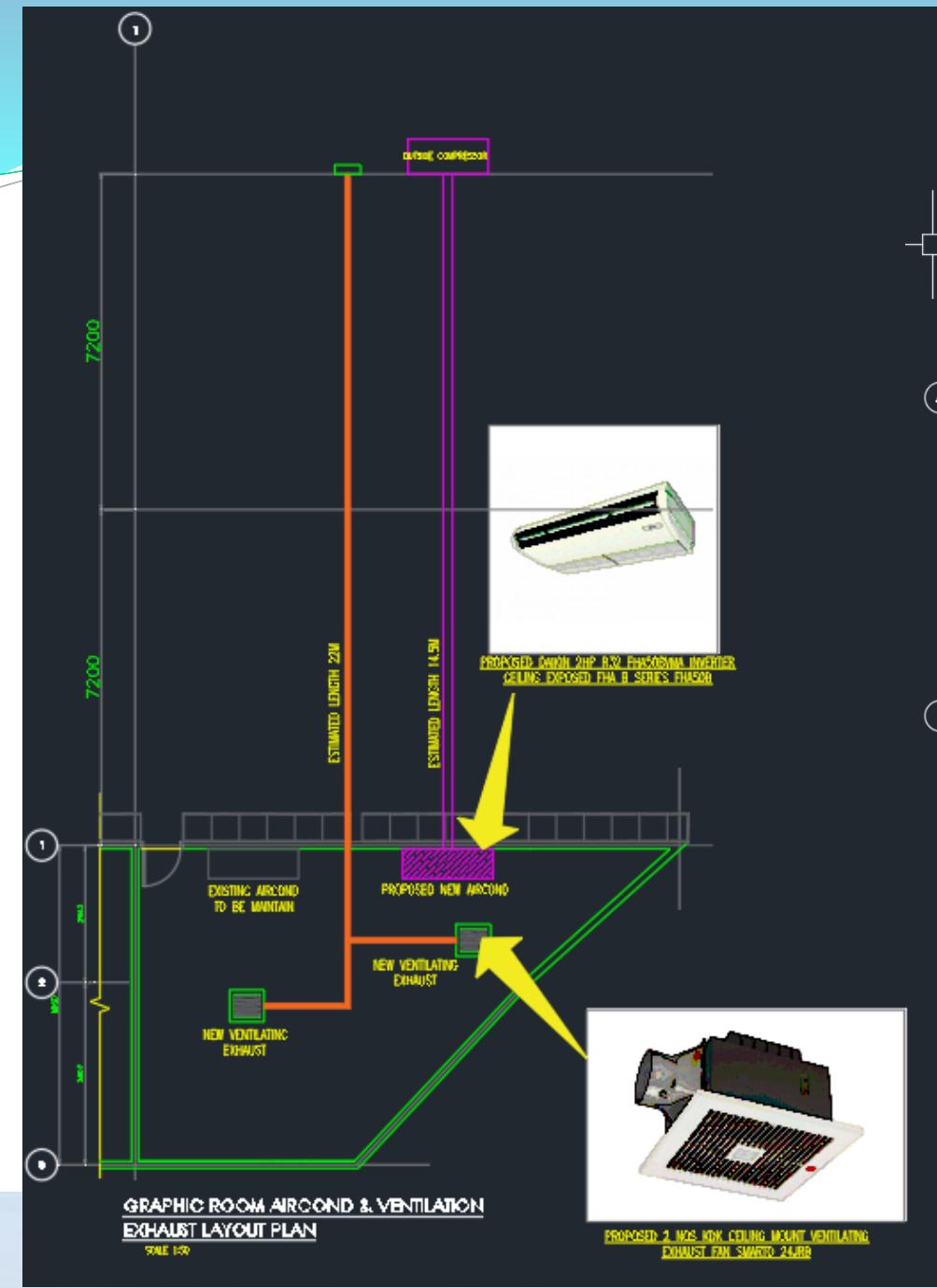
SOLUTION

- Hacked all slab in half,
- Removed existing BRC and all scupper drain shows;
- Grouting or special material injection as water stopper in certain area.
- Top up new concrete slab at hacked slab (refer drawing to details).





SLAB SECTION A-A(RECTIFICATION WORK)



COST ESTIMATION

(by QS cost)

COST SUMMARY

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN
DI BANGUNAN IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 1 - FINAL SUMMARY

ITEM	DESCRIPTIONS	PAGE	MPC ESTIMATE
			TOTAL AMOUNT (RM)
A	NOTES & PREAMBLES	BILL 2/1/2	
B	PRELIMINARIES	BILL 3/1/1	20,000.00
C	INJECTION WORKS	BILL 4/1/1	65,000.00
D	HACKING WORKS	BILL 5/1/1	20,000.00
E	CONCRETE WORKS	BILL 6/1/1	25,000.00
F	FINISHING WORKS	BILL 7/1/1	25,000.00
G	DOOR	BILL 8/1/1	2,000.00
H	MECHANICAL & ELECTRICAL WORKS	BILL 9/1/1	30,000.00
	TOTAL CARRIED TO FORM OF TENDER		187,000.00



We Design
We Engineer
We Provide Total Asset Solutions



For further inquiry:
✉ info@mtcgroup.com.my; roslan@mtcgroup.com.my
www.mtcgroup.com.my
MALAYSIA





PROPOSED RECTIFICATION AND REFURBISHMENT WORKS TO
GRAPHIC ROOM (BLOK INOVASI) AT
MALAYSIAN PRODUCTIVITY CORPORATION (MPC),
PETALING JAYA, SELANGOR



BILL OF QUANTITY

(BQ)

ESTIMATE OPTION 1

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN DI
BANGUNAN IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 1 - SUMMARY OF ESTIMATE

ITEM	DESCRIPTIONS	PAGE	TOTAL AMOUNT (RM)
A	NOTES & PREAMBLES	BILL 2/1/2	
B	PRELIMINARIES	BILL 3/1/1	20,000.00
C	INJECTION WORKS	BILL 4/1/1	65,000.00
D	HACKING WORKS	BILL 5/1/1	20,000.00
E	CONCRETE WORKS	BILL 6/1/1	25,000.00
F	FINISHING WORKS	BILL 7/1/1	25,000.00
G	DOOR	BILL 8/1/1	2,000.00
H	MECHANICAL & ELECTRICAL WORKS	BILL 9/1/1	30,000.00
	TOTAL ESTIMATE OPTION 1		187,000.00

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN
DI BANGUNAN IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 2 - NOTES & PREAMBLES

ITEM	DESCRIPTION	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<p><u>NOTES & PREAMBLES</u></p> <p>Notes :</p> <p>A For description of Materials, Workmanship and Preamble applicable to this schedule, refer to Preambles and Drawings.</p> <p>PREAMBLES</p> <p>B The description spelt out herein shall be read in conjunction with all Drawings and Performance</p> <p>C Rates for the Works shall apply to actual sizes constructed to suit site dimensions, even if it differs from dimension in the drawings.</p> <p>D The tenderer must price hereunder for all Mechanical and Electrical required for complete installation of the Works and must allow for all other items required even if not specifically mentioned in the Bills of Quantities.</p> <p>E Where proprietary products of fittings are specified, equivalent may be considered subject to the Engineer's approval.</p> <p>F "Other approved equivalent" shall meet the following criteria:- a) Either as per standard requirement or superior b) No time implication c) Cost saving d) Approved by Engineer</p>				
BILL 2/1/1		TOTAL CARRIED FORWARD			

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- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 2 - NOTES & PREAMBLES

ITEM	DESCRIPTION	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	TOTAL BROUGHT FORWARD				
G	<u>PREAMBLES (CONT'D)</u> The Tenderer shall submit samples / technical catalogues of his proposed equivalent together with his Tender.				
H	The Tenderer is to ascertain the actual quantities required to be ordered for the project.				
J	The Tenderer is deemed to have included the above requirements and any other General Conditions and Preliminaries in their tender price.				
K	Works are deemed to include protecting after installation. Protecting mean affording protection in the form of tarpaulins, plywood linings, polystyrene linings and other necessary protective coverings whenever required over installed finishes which are subject to scratches, stains or damage and removing upon completion of the Works when directed.				
L	It is the tenderer's responsibility to keep the existing, surrounding and adjacent structure free from damage due to the handling of works carried out throughout the construction period. Any implication of cost arise from damages to existing elements in the building due to the contractor's negligence is to be born by the contractor				
M	It is the Tenderer's responsibility to inform and highlight any discrepancies, missing pages, document or etc during Tender stage as failure to do so, any matters arising due to this issue will not be entertained.				
N	The Tenderer shall refer to the manufacturer's standards and detail. The cost quoted shall be inclusive of all necessary accessories (e.g bulbs, casing, cabinet wiring and etc), any work to provide opening (e.g hacking or coring and etc) and all work to suit the functioning of the item				
P	The Tenderer shall visit the site and inspect the site prior to tendering and shall acquaint himself with the full extent and character of the works at site.				
Q	All cost quoted shall include labour, materials, plant, waste, overheads and profit and any other charges which the Tenderer considers necessary for the work in question.				
BILL 2/1/2		TOTAL CARRIED TO SUMMARY OF ESTIMATES			

ESTIMATE OPTION 1

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN DI BANGUNAN IBU
PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 3 - PRELIMINARY WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE (RM)	AMOUNT (RM)
	<u>Preliminaries works</u>				
1.0	The amount inserted by the Contractor for such preliminaries shall be deemed to apply to the whole works carried out under this contract	Item			
1.1	a. Sample and testing	Item			
	b. Insurances of works, Public liability insurances & Worksmen's compensation.	Item			
	c. Registration under Skim Keselamatan Sosial Pekerja (PERKESO)	Item			
	d. Rectification during defect liability period	Item			
1.2	Contractor's storage and protection of materials.	Item			
1.3	Contractor to provide protection to the works upon installation	Item			
1.4	Contractor to provide protection to existing elements within Graphic Room that are to be maintained and making sure the existing elements in the building are dry at all times and free from debris, dirt and like and making good all works disturbed	Item			
1.5	Safety precautions and requirement for proper execution of the works	Item			
1.6	Power and water supply for the works	Item			
1.7	Plant, machineries and tools for the works	Item			
1.8	Submission of sample and catalogue	Item			
1.9	Program of works	Item			
2.0	Provide three (3) sets of work progress photos	No.	3		
2.1	Provide Five (2) sets "As Built Drawing"	No.	2		
2.2	Site Cleanliness and clearing upon completion ready to handover	Item			
2.3	Submission of warranty/guarantee from the manufacturer/supplier for all the material incorporated into the works	Item			
	TOTAL				
BILL 3/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				20,000.00

ESTIMATE OPTION 2

PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN DI BANGUNAN
IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO. 4 - INJECTION WORKS

Item	Description	Unit	Qty	Rate (RM)	Amount (RM)
	<p>Note: All description must be read in conjunction with notes & preambles, drawings and specification</p> <p><u>Injection Work (All Provisional)</u></p> <p>To supply, apply and carry out injections with MS Injeckt GL-95TX Durable sealing (or approved equivalent) and waterproofing by drilling and grid pattern of injection channels (structural member) including making good of the works upon completion to receive waterproofing membrane and concrete slab (measured separately) all to the manufacturer's instruction and to the satisfaction of the Engineer</p> <p>Carry out 18mm dia. Injection channels drilled into the structural member along the identified joint. Depth of boreholes shall be equal to the thickness of the structural part. The boreholes shall be spread throughout the injection area; 300mm to 400mm spacing between the holes are recommended</p>				
A	<p>Graphic room</p> <p>Carefully mixing of the MC-injeckt GL-95TX (or approved equivalent) components (5 parts) A&B must be carried out in separate containers and separate by open ground, so that neither subsets nor splash can get in the other components. The concentration of the solutions determines the reaction time which is dependent on ambient temperatures. using a curing trial, the reactivity is checked. Make good of the works upon completion to receive waterproofing membrane and concrete slab (measured separately) all to the manufacturer's instruction and to the satisfaction of the Engineer</p> <p>Start the injection with two components pump (MC-I700 or equivalent) and steel packers MC-Steel Packer 18/300 are then inserted firmly into the boreholes. The packer:- Flat-head nipple with valve opening of approx. 4mm - pressure range : up to 200 bar</p>	no	106	280.00	29,680.00
B	Graphic room	m2	9	2,000.00	18,000.00
			Total		47,680.00
BILL 4/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				65,000.00

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IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO.5 - HACKING AND DEMOLITION WORKS

Item	Description	Unit	Qty	Rate (RM)	Amount (RM)
	<p>Note: All description must be read in conjunction with notes & preambles, drawings and specification</p> <p><u>Hacking and Demolition works (All Provisional)</u></p> <p>Note: The contractor must seek prior approval from the Engineer before the execution of works upon the uncovering of any structural elements found during the works such as column, beam and the like,</p> <p><u>Hack, demolish, remove, cart away and dispose the following works to the Contractor's own dump including all existing fittings and fixtures of the work; any electrical and mechanical components; any elements hindering refurbishment works and making good of the works upon completion to the satisfaction and approval of the Engineer.</u></p> <p>A Existing vinyl flooring; of approximately 61m² in area</p> <p>B 75mm thick existing concrete floor slab; of approximately 25m² in area</p> <p>C Existing brickwall of approximately 3m high, 11m in length and 150mm thick including existing 2 nos of door frame (1 nos of frame to maintain) and all structural elements found during the works</p> <p>D Carefully remove existing doors of approximately 2100mm x 1000mm; including all fittings and fixtures</p> <p>E Existing sink</p> <p>F Existing cabinet of approximately 3000mm high, 6500mm in length and 1000mm width</p> <p>G Existing suspended ceiling of approximately 61m² area</p> <p><u>ANY OTHER ITEMS</u></p> <p><u>Any other items not included above but deemed to be necessary for due completion of the works:-</u></p> <p>H i)</p> <p>J ii)</p> <p>K iii)</p>				
				Total	20,000.00
BILL 5/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				20,000.00

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PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO.6- CONCRETE WORKS

Item	Description	Unit	Qty	Rate	Amount (RM)
A	<p>Note: All description must be read in conjunction with notes & preambles, drawings and specification</p> <p><u>Concrete Works (All Provisional)</u></p> <p><u>Rebound Hammer Test</u></p> <p>Perform rebound hammer test on existing slab and wall to the approval of the Engineer</p> <p><u>Vibrated Reinforced Concrete Grade C30/37; including approved 'Mapei' Idcrete WP integral flexible blinded cementitious waterproof coating concrete waterproofing system (or approved equivalent), liquid waterproofing admixture dosed at 0.7 litre per 100kg cement inclusive of 300mm skirting c/s angle fillet and to work around floor outlets and providing five (5) years written guarantee all strictly in accordance to the manufacturers instruction to the following all to the satisfaction of the Engineer as described;</u></p>	LS			5,000.00
B	<p>75mm thick cast in-situ slab laid on cementitious waterproofing membrane (measured separately)</p> <p><u>Reinforcement</u></p> <p><u>Layer of steel fabric reinforcement as described well lapped at joints including notching around all obstructions (measured nett - no allowance for laps)</u></p>	m3	53	265.00	14,045.00
C	<p>BRC A10 in concrete slab</p> <p><u>Waterproofing System</u></p> <p>Note: Prepare existing wall including scraping, cleaning, replastering and removing any debris to achieve smooth surface to receive waterproofing membrane</p> <p><u>Prepare and apply approved waterproofing system as described onto prepared surface, all applied strictly in accordance to the manufacturer's instructions and to the satisfaction of Engineer</u></p>	m2	60	20.00	1,200.00
D	Laid to floor slab	m2	60	38.00	2,280.00
E	Laid to wall	m2	45	38.00	1,710.00
F	<p><u>Supply and install swellable waterstop or approved equivalent on construction joint all accordance to manufacturer's instruction and approval of Engineer</u></p> <p>To wall</p>	m	15	41.00	615.00
Total					24,850.00
BILL 6/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				25,000.00

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PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN DI BANGUNAN
IBU PEJABAT MPC (BLOK INOVASI) PETANG JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
 BILL NO.7 - INTERNAL FINISHES WORKS

Item	Description	Unit	Qty	Rate	Amount (RM)
	<p>Note: All description must be read in conjunction with notes & preambles, drawings and specification</p> <p><u>INTERNAL FINISHES WORKS (All Provisional)</u></p> <p><u>INTERNAL FLOOR FINISHES</u></p> <p><u>Approved cement and sand (1:3) screed as described :-</u></p> <td></td> <td></td> <td></td> <td></td>				
A	20mm Thick screed to receive floor tiles (measured separately)	m2	60	23.00	1,380.00
	<u>Supply and lay approved tiles as described laid to pattern as directed by the Engineer laid on mortar bedding or suitable adhesive with grouting gap range 3mm to 4mm width including jointing and pointing with approved coloured cement including curve tiles at joints and drops :-</u>				
B	300mm x 300mm x 10mm thick porcelain tiles to floor slab	m2	60	60.00	3,600.00
C	To skirting; 100mm high	m	33	12.00	396.00
	<u>INTERNAL WALL FINISHES</u>				
	<u>Making Good Existing</u>				
	<u>Making good existing plastered wall including cleaning, scraping, replastering and all works to maintain the functioning of item and preparing it to receive new paint (measured separately) all to the satisfaction of the Engineer</u>				
D	of approximately 61m ² area	LS			
	<u>Approved cement and sand (1:3) as specified internal plastering; steel trowel finish :-</u>				
E	20mm thick plainface to existing walls and columns including angle beads, stop beads and other beads where required	m2	45	32.00	1,440.00
	<u>Prepare and apply one coat of approved alkali-resistant primer and two finishing coats of approved emulsion paint internally to the satisfaction of the Engineer on the following surfaces</u>				
F	Surfaces of plastered walls and columns	m2	100	7.00	700.00
	<u>INTERNAL CEILING FINISHES</u>				
	<u>Mineral Fiber Board</u>				
G	Supply and install 1200mm x 600mm x 96mm thick approved mineral fiber board ceiling (class 'o'), set out symmetrically as described; including suspension system comprising of main tees, cross tees and wall angle to ceiling and including aluminium 'T' frame complete with wire hanger and aluminium bracing as described clipped on metal framing tie to slab, beam or roof structure including insulation and all necessary accessories (or approved equivalent) all in accordance to the drawings, manufacturer's detail and Engineer's approval	m2	60	200.00	12,000.00
H	Extra over 600mm x 600mm x 96mm thick mineral fiber board (Class 'O') access panel	no	1	95.00	95.00
	<u>INTERNAL CEILING FINISHES (Cont'd)</u>				
	<u>Prepare and apply one coat of approved alkali-resistant primer and two finishing coats of approved emulsion paint as described internally on the following surfaces</u>				
K	Mineral fiber board ceiling	m2	60	7.00	420.00
	Total				20,031.00
BILL 7/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				25,000.00

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- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
 BILL NO.8 - DOORS

Item	Description	Unit	Qty	Rate	Amount (RM)
	<p>Note: All description must be read in conjunction with notes & preambles, drawings and specification</p> <p><u>INTERNAL DOORS (All Provisional)</u></p> <p><u>Making Good Existing</u></p> <p><u>Making good existing door frame including cleaning, painting and all works to maintain the functioning of item and preparing it to receive new door leaf (measured separately) all to the satisfaction of the Engineer</u></p>				
A	<p>of approximately 1000mm x 2100mm door opening</p> <p><u>Plywood Flush Door</u></p> <p><u>Approved 38mm thick skeleton framed plywood flush door complete with Nyatoh plywood lining, edging all around and mitred at angles, rebated meeting stiles and hanging on butt hinges unless otherwise stated including glass on the side of overall size 200mm x 150mm (ironmongery measured separately) (or approved equivalent) as per Drawings and to the satisfaction of the Engineer</u></p>	LS			200.00
B	<p>overall size 1000mm x 2100mm high; single leaf</p> <p><u>Ironmongery To Doors</u></p> <p>Supply and fix; all ironmongery to doors; inclusive of locksets, levelset, sliding tracks, door closer, door stopper, door pull, door knob, flush pull, level latch set, door selector, hinges, rebated parts etc all as per drawings and specification and to the satisfaction of the Engineer</p>	No	1	1,000.00	1,000.00
C	<p>Nyatoh timber door overall size 1000mm x 2100mm high; single leaf</p> <p><u>Painting to Doors</u></p> <p><u>Knot, prime, stop and paint undercoat and two finishing coats of approved high gloss enamel paint as described on woodwork; all in accordance to manufacturer's instruction and to the satisfaction of Engineer</u></p>	LS			300.00
D	<p>Surface and sides of timber door</p>	m2	5	10.00	50.00
Total					1,550.00
BILL 8/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				2,000.00

ESTIMATE OPTION 1

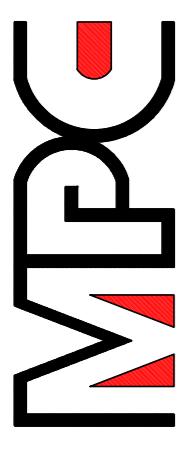
PERKHIDMATAN PERUNDING KEJURUTERAAN AWAM, STRUKTUR DAN GEOTEKNIK BAGI KERJA PEMBAIKAN DI BANGUNAN
IBU PEJABAT MPC (BLOK INOVASI) PETAING JAYA

- REFURBISHMENT WORKS TO GRAPHIC ROOM (ALL PROVISIONAL)
BILL NO.9 - MECHANICAL & ELECTRICAL WORKS

Item	Description	Unit	Qty	Rate (RM)	Amount (RM)
	<u>MECHANICAL WORKS (All Provisional)</u>				
	<u>Air-Conditioning & Mechanical Ventilation System</u>				
A	Supply and install 1 unit Airconditioner Daikin 2HP R32 FHA50BVMA (or approved equivalent) inverter ceiling exposed FHA B series FHA50B Including all necessary accessories, wiring, ducting of approximately 14500mm length, additional plug point, and all necessary works to suit the function and making good all works disturbed all as per the drawings, specification and manufacturer's detail and to provide manufacturer's warranty; all to the satisfaction of the Engineer	LS			8,000.00
B	Supply and install 2 nos of KDK ceiling mount ventilating exhaust fan smarto 24JRB (or approved equivalent) including all necessary accessories, wiring, ducting of approximately 22500mm length, additional plug point, and all necessary works to suit the function; all as per the drawings, specification and manufacturer's detail and to provide manufacturer's warranty; all to the satisfaction of the Engineer	LS			6,500.00
	<u>ELECTRICAL WORKS</u>				
C	25 nos Philips 4 inch downlight 18W recessed light indoor lamp white bulb (or approved equivalent) including all necessary accessories, wiring, plug points, 2 switch points and all necessary works to suit the function; all as per the drawings, specification and manufacturer's detail and to provide manufacturer's warranty; all to the satisfaction of the Engineer	LS			11,500.00
	<u>Testing and commissioning</u>				
D	To perform testing to the satisfaction of the Engineer	LS			1,500.00
				Total	27,500.00
BILL 9/1/1	TOTAL CARRIED TO SUMMARY OF ESTIMATES				30,000.00

DRAWING





MALAYSIAN PRODUCTIVITY CORPORATION

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PERUNDING STRUKTUR & AWAM

SAYA MEMPERAKUI BAHWA PERINCIAN DALAM PELAN INI UNTUK PROJEK TERSEBUT DI ATAS
ADALAH MENURUT KEHENDAK -KEHENDAK UNDANG-UNDANG KECIL BANGUNAN SERAGAM 1984 DAN
SAYA SETUJU TERIMA TANGGUNGJAWAB PENUH DENGAN SEMAWARNYA.

MTC
ENGINEERING CONSULTANCY
SDN BHD

NAMA : IR MOHD. RASHID BIN YA'ACOB
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TAJUK PROJEK:
**PERKHIDMATAN PERUNDING
KEJURUTERAAN AWAM, STRUKTUR
DAN GEOTEKNIK BAGI KERJA
PEMBAIKAN DI BANGUNAN IBU
PEJABAT MPC (BLOK INOVASI)
PFTAI NG JAYA**

