لمباك اركيتيك جوروترا ڤروفيسيونل دان جورواوكور باهن نڬارا بروني دارالسلام
Brunei Darussalam Board of Architects, Professional Engineers and Quantity Surveyors

Reference : ( ) KPN/BMD/BAPEQS/6

24 Safar 1441 H
23 October 2019 M

To:
Chairman
ASEAN Chartered Professional Engineer Coordinating Committee
c/o Pusat Pembinaan Kompetensi & Pelatihan Konstruksi
Kementerian Pekerjaan Umum
Jalan Sapta Taruna Raya
Kompleks PU Pasar Jumat
Jakarta 12310

Dear Sir / Madam,

DEFINITIONS AND SCOPE OF WORKS FOR CIVIL ENGINEERING SERVICES

The Engineering Monitoring Committee of Brunei (EMC), is hereby submitting the Definitions and Scope of Works for Civil Engineering Services for your perusal and necessary action on this matter.

Thank you.

Yours faithfully,

[Ir. AWG HAJI AMER HISHAMUDDIN BIN POKAPDSS HAJI ZAKARIA]
Chairman
Brunei Darussalam Board of Architects, Professional Engineers and Quantity Surveyors

c.c.
- ASEAN Chartered Professional Engineers (ACPE) – Chairman of EMC
- Chairman International Affair Committee (Engineering Division)

BMD/BAPEQS/FAM/NJHA/zhm

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DEFINITION SCOPE OF WORK FOR CIVIL ENGINEERING SERVICES

A Civil Engineer is a person who practices Civil Engineering and who are registered under APEQS Order 2011. Civil engineering is a professional engineering discipline that provides services in the form of feasibility studies, design, preparation of detailed drawings, estimates, management, contract administration, supervision of construction of works of the physical and naturally built environment such as roads, bridges, canals, airports, dams, sewerage systems, water supply pipelines, railways, building structures and any other works that requires the knowledge and application of civil engineering. Civil engineering is broken down into a number of sub-disciplines namely, structural engineering, geotechnical engineering, water resources engineering, transportation engineering, coastal engineering and environmental engineering.

The types of structures and facilities under the practice of Civil Engineering are as follows:-

a) Airports including all landside and airside facilities;
b) Highways, roads and bridges;
c) Railways;
d) Buildings of all types;
e) Irrigation;
f) Canals;
g) Dams and other impounding structures;
h) Harbours, ports, dry docks, lighthouses and other marine and navigational structures;
i) Transport networks structures;
j) River and shore, reclamation and coastal improvements;
k) Water supply, sanitary, landfills and sewerage works;
l) Structures for flood control, drainage and storm surge and wave protection;
m) Tunnels, nuclear plants, communication towers, offshore structures;
n) Other works or structures requiring civil engineering application.
o) Definition Scope of Works BAPEQS Scale of Fees & Practice (SOFPC)

Report and Advisory Work

For reports and advisory work, the services required from the Civil Engineer will usually comprise one or more of the following:

a) Investigating and advising on a project and submitting a report thereon. The Civil Engineer may be asked to examine alternatives; review all technical aspects; make an economic appraisal of costs and benefits; draw conclusions and make recommendations.
b) Inspecting existing works (e.g a reservoir or a building or an installation) and reporting thereon. If the Client requires continuing advice on maintenance or operation of an existing project, the Civil Engineer may be engaged to make periodic site visits.
c) Making a special investigation of an engineering problem and reporting thereon.
d) Making valuations of plant and undertakings.

Basic Services for Civil Engineering Works in Building Projects where the Civil Engineer is not appointed as Principal Consultant

The Civil Engineer shall provide civil and structural engineering services in relation to the design, construction and completion of the building projects as set out herein – Basic Services (Stage 1 – 5). These services are normally carried out for a particular project once the client has decided in broad terms its main characteristics and the preliminary feasibility studies have been completed.

Stage 1 – Concept and Schematic Design

a) Investigating available data for information relating to the Project and which are relevant to the civil and structural works and collaborating with other Consultants appointed by the Client. The Client shall supply all pertinent data and information, together with such assistance as shall reasonably be required for the carrying out by the Civil Engineer of his duties under this Agreement.
b) Advise on the need for any special surveys, investigations, model tests or feasibility studies and propose appropriate action.
c) Consult with relevant authorities on matters of principle in connection with the civil and structural works.
d) Provide sufficient preliminary information for cost estimates by the Quantity Surveyor.
e) Participate in the preparation of an outline programme for design and construction.

Stage 2 – Design Development

a) Obtain information from the Client that the preliminary information including sketch plans, cost estimates and outline programme for design and construction as established at Stage 1d) and 1e) represents the basis for instructions to proceed.
b) Develop the outline designs and produce Sketch Drawings associated with the civil and structural works.
c) Prepare revised outline designs and sketch drawings for inclusion in the overall cost plan prepared by the design team.
d) Submit the final scheme designs for the civil and structural works to the Architect to be included in the Works.

Stage 3 – Detailed Design and Contract Documentation

a) Collaborate throughout this Stage with other members of the design team to ensure that the designs are developed in a manner compatible with the architectural concepts.
b) Liaise with relevant authorities for provision of the necessary services in relation with the civil and structural works.
c) Agree with the Client and the design team the scope of the Specifications and Design Drawings.
d) Prepare Specifications and Design Drawings for the civil and structural works.
e) Provide relevant information to the design team based upon Design Drawings for the civil and structural works.
f) Advise on relevant aspects of contract conditions relevant to the civil and structural works and upon forms of tender and invitation to tender for the civil and structural works.
g) Submit and liaise with relevant authorities for approval of design and drawings, issuance of commencement of works, permits and the issuance of clearances from relevant departments.

Stage 4 – Tender and Recommendation

a) Advise the Client as to the suitability for the execution of the civil and structural works of firms selected for competitive tendering.
b) Prepare drawings for issue to firms selected for tender.
c) Assist in evaluating the tenders for the civil and structural works and provide recommendation if necessary.

Stage 5 – Construction

a) Assist in the preparation of all formal Contract documents relating to accepted tenders for carrying out the Works or any part thereof.
b) Advise the Client on the appointment of Site Staff.
c) Provide such further information as is necessary, in the opinion of the Civil Engineer, to enable the Contractor to prepare Shop Drawings.
d) Review the Contractor's proposals for the execution of the civil and structural works insofar as these reflect the design intent.
e) Collaborate with other members of the design team in resolving any problems which may arise from the Contractor's Shop Drawings.
f) Advise on the establishing of an appropriate cost control procedures with other members of the design team.
g) Instruct site staff appointed on their duties and the strict observance of all statutory regulations and requirements.
h) Make such visits to the site as the Civil Engineer shall consider necessary to satisfy himself as to the performance of any site staff appointed and that the civil and structural works are executed generally according to the designs and specifications and otherwise in accordance with good engineering practice.
i) Provide technical information to the Quantity Surveyor appointed by the Client as necessary for cost control of the civil and structural works.
j) Advise the Client or the design team as to the need to vary any part of the Project for any reason relating to the civil and structural works.
k) Initiate instructions for any minor variations to the civil and structural works within the powers delegated by the Client to the Civil Engineer.
l) Initiate proposals to the design team for the issue of instructions relating to any necessary major variations to the civil and structural works.
m) Provide technical information to the Quantity Surveyor appointed by the Client to enable the value of any variation to the civil and structural works to be agreed.
n) Provide technical information to the Quantity Surveyor appointed by the Client to enable interim valuation of the civil and structural to be made and certificates issued.
o) Advise, if requested, the design team on interim certificates for the civil and structural works in progress.
p) Review the Contractor's detailed proposals for carrying out performance and materials testing.
q) Review and advise the design team the results of the performance and materials testing and records thereof.
r) Inspect the civil and structural works on completion in conjunction with site staff and record any defects.

s) Receive and review on completion of the civil and structural works, copies of endorsed as constructed Drawings prepared by the Contractor for onward transmission to the relevant Authority for approval or record purposes.

t) Advise in settling any disputes or differences relating to the civil and structural works which may arise between the Client and the Contractor provided that such assistance shall not relate to the detailed examination of a financial claim nor extend to advising the Client following the taking of any step in or toward litigation or arbitration.

Basic Services for Civil Engineering Works in Projects where the Civil Engineer is appointed as Principal Consultant

The Civil Engineer shall provide civil and structural engineering services in relation to the design, construction and completion of the building projects as set out herein – Basic Services (Stage 1 – 5). These services are normally carried out for a particular project once the client has decided in broad terms its main characteristics and the preliminary feasibility studies have been completed.

Stage 1 – Concept and Schematic Design

a) Investigating data and information relevant to the Works which are reasonably accessible to the Civil Engineer and considering any reports relating to the Works which have either been previously prepared by the Civil Engineer or else prepared by others and made available to the Civil Engineer by the Client.
b) Advising the Client on making any further topographical survey of proposed site of the Works which may be necessary to supplement the topographical information already available to the Civil Engineer.
c) Advising the Client on the need to carry out any geotechnical investigations which may be necessary to supplement the geotechnical information already available to the Civil Engineer, arranging for such investigations when authorised by the Client, certifying the amount of any payments to be made by the Client to the persons or firms carrying out such investigations under the Civil Engineer's direction, and advising the Client on the results of such investigations
d) Consult with relevant authorities on matters of principle in connection with the civil and structural works.
e) Advising the Client on the need for arrangements to be made for the carrying out of special surveys, investigations or model tests and advising the Client of the results of any such surveys, investigations or tests carried out.
f) Consulting any Architect appointed by the Client in connection with the architectural treatment of the Works.
g) Prepare preliminary cost estimate on approved schematic design for Client's approval to proceed.
h) Preparing such reports and documents as are necessary to enable the Client to consider the Civil Engineer's general proposal for the construction of the Works in the light of the investigations carried out by him at this stage, and to enable the Client to apply for approval in principle of the execution of the Works in accordance with such proposals.

Stage 2 – Design Development

a) Obtain information from the Client that the preliminary information including sketch plans, cost estimates and outline programme for design and construction as established at Stage 1g) and 1h) represents the basis for instructions to proceed.
b) Develop the preliminary designs and produce Sketch Drawings associated with the Works.
c) Prepare overall cost plan for Client's approval.
d) Liaise with relevant authorities for provision of the necessary services in relation with the Works.
e) Submit final scheme designs for the Works.

Stage 3 – Detailed Design and Contract Documentation

a) Prepare designs, tender drawings and specifications in connection with the Works.
b) Advising as to the appropriate conditions of contract to be incorporated in any contract to be made between the Client and a Contractor.
c) Submit and liaise with relevant authorities for approval of design and drawings, issuance of commencement of works, permits and the issuance of clearances from relevant departments.
d) Preparing such specifications, schedules and bills of quantities as may be necessary to enable the Client to obtain tenders or otherwise award a contract for carrying out the Works.

Stage 4 – Tender and Recommendation

a) Advise the Client as to the suitability for the execution of the Works of firms selected for competitive tendering.
b) Prepare drawings for issue to firms selected for tender.
c) Evaluate the tenders for the Works and provide recommendation if necessary based upon the relative merits of tenders and prices received.

Stage 5 - Construction

a) Advising on the preparation of formal contract documents relating to accepted tenders for carrying out the Works or any part thereof.
b) Inspecting and testing during installation such electrical and mechanical materials, machinery and plant supplied for incorporation in the Works as are usually inspected and tested by Civil Engineers, and arranging and witnessing acceptance tests.
c) Advising the client on the need for special inspection or testing during manufacture other than that referred to in sub-clause b).
d) Advising the Client on the appointment of site-staff.
e) Preparing bar bending schedules and any further designs and drawings which may be necessary and upon request by the Client to do so.
f) Examining and approving the Contractor's working drawings.
g) Making such visits to site as the Civil Engineer shall consider necessary to satisfy himself as to the performance of any site staff, and to satisfy himself that the Works are executed generally according to the contract and otherwise accordance with good engineering practice.
h) Giving all necessary instructions to the Contractor, provided that the Civil Engineer shall not without the prior approval of the Client give any instructions which in the opinion of the Civil Engineer are likely substantially to increase the cost of the Works unless it is not in the circumstances practicable for the Civil Engineer to obtain prior approval.
i) Issuing all certificates as required in the Contract.
j) Delivering to the Client on the completion of the Works such records and manufacturers' manuals as are reasonably necessary to enable the Client to operate and maintain the Works.
k) Deciding any dispute or difference arising between the Client and the Contractor and submitted to the Civil Engineer for his decision, provided that this service shall not extend to advising the Client following the taking of any step in or towards any arbitration or litigation in connection with the Works.

Prepared by:
Board of Architects, Professional Engineers and Quantity Surveyors (BAPEQS),
Brunei Darussalam

DEFINITION SCOPE OF WORK FOR MECHANICAL AND ELECTRICAL ENGINEERING SERVICES

MECHANICAL ENGINEERING SERVICES

Mechanical Engineer is a profession that has the integration competence of several scopes of mechanical engineering disciplines in implementing, managing and leading engineering practice in mechanical engineering, including and not limited to: production field (industry, manufacturing and capital goods industry), consultancy, and design, construction field (fabrication, installation), transportation (transportation, heavy equipment), energy and mining fields, agricultural machinery field, mechatronics, automation and natural resource and fuel processing fields. Mechanical engineering involves disciplines of mathematics, science, technology (engineering), engineering, energy conversion and environmental engineering.

Scope of Regulated Engineering Work – Mechanical Engineering

1. All consultancy services, investigation of mechanical engineering work on project planning, design and computational work, construction or production supervision, testing, commissioning, operation or maintenance supervision at all types and sizes.

2. Project planning work
   a. Machinery and mechanical equipment
   b. Vapors boiler or Steam boiler, pressure vessel, or industrial kiln, serving in a building
   c. Air conditioner or refrigerator equipment
   d. Fluid system in pressure pipeline, or in vacuum pipes serving in a building
   e. Energy management
   f. Fire protection and Fire fighting system

3. Design and Computational Work
   a. Machinery
   b. Steam boiler or other type of vapors boiler, pressure vessel, or industrial kiln at all sizes,
   c. Air conditioner or refrigerator
   d. Fluid system in pressure pipeline, or in vacuum pipes
   e. Energy management at all sizes,
   f. Fire protection and Fire fighting system
   g. Plumbing and Sanitary engineering/system for internal of building.

4. Construction or Production Supervision
   a. Machinery
   b. Steam boiler or other type of vapors boiler, pressure vessel, or industrial kiln
   c. Air conditioner or refrigerator
   d. Fluid system in pressure pipeline, or in vacuum
   e. Fire protection and Fire fighting system

5. Testing, Commissioning, Operation, and Maintenance Supervision
   a. Machinery having combined total power system greater than 500 kilowatt,
   b. Steam boiler or other type of vapors boiler, pressure vessel, or industrial kiln
   c. Air compressor or gas compressor
   d. Air conditioner or refrigerator
   e. Fluid system in pressure pipeline, or in vacuum pipes
   f. Fire protection and Fire fighting system
   g. Plumbing and Sanitary engineering/system for internal of building.

ELECTRICAL ENGINEERING SERVICES

Electrical Engineer is someone who has a profession in Engineering. This profession has integrated competencies of several disciplines and technological practice for efficient electrical power plant, telecommunication and electronic engineering.

Electrical engineering involves disciplines such as power plant engineering, physics engineering (instrumentation and control systems), civil engineering (power plant construction, transmission, transmission tower), computer science and informatics engineering (database, SCADA), electro (biomass) and others.

Scope of Regulated Engineering Work – Electrical Engineering
Electrical engineering consists of 2 sub-discipline; Electrical Power, Electrical Telecommunication.

Electrical Power

1. All consultancy of electrical power engineering work on project planning, design and computational work, construction or production supervision, investigation work, testing, commissioning, operation and maintenance supervision at all types and all sizes.

2. Project planning work
   a. Power transmission line, power distribution system and electrical power system

3. Design and Computational Work
   a. Electrical system or electrical equipment
   b. Building Electrical
   c. Fire alarm and signaling system and lightning protection system of high rise building, large scale building, or condominium.

4. Construction or Production Supervision
   a. Electrical system or electrical device
   b. Building Electrical system
   c. Fire alarm and signaling system and lightning protection of high rise building, large scale building, or condominium.

5. Investigation Work
   a. Electrical system or electrical equipment
   b. Fire alarm and signaling system and lightning protection system of high rise building, large scale building, or condominium.

6. Testing, Commissioning , Operation and Maintenance Supervision
   a. Electrical system or electrical equipment
   b. Building Electrical system
   c. Fire alarm and signaling system and lightning protection of high rise building, large scale building, or condominium,

Electrical Telecommunication

1. All consultancy of electrical telecommunication engineering work on project planning, design and computational work, operation and maintenance supervision.

2. Project planning work of telecommunication network having receiving, transmission, and broadcasting stations to propagate electromagnetic wave of frequency greater than 300 kHz and having transmission power at each station greater than 1kW.

3. Design and Computational Work
   a. Electromagnetic wave propagation system having frequency greater than 300 kHz and having transmission power at each station greater than 1kW.
   b. Receiving, transmission, separating and multiplexing of signal system utilizing electromagnetic wave having frequency greater than 300 MHz and having greater than 60 audio channels or equivalent.

4. Testing, commissioning, Operation and Maintenance Supervision of electromagnetic wave propagation system of frequency having 300 kHz and having transmission power at each station greater than 1kW.

Prepared by:
Board of Architects, Professional Engineers and Quantity Surveyors (BAPEQS),
Brunei Darussalam

لمباڬ اركيتيك جوروترا ڤروفيسيونل دان جوروواوكور باهن نڬارا بروني دارالسلام
Brunei Darussalam Board of Architects, Professional Engineers and Quantity Surveyors

Reference: (2109) KPN/BMD/BAPEQS/6

17 Zulhijjah 1446
14 June 2025

To:
Er. FRANCIS V. MAPILE
Chairman
ASEAN Chartered Professional Engineer Coordination Committee
c/o Services and Investment Division
ASEAN Secretariat
70 A Jalan Sisingamangaraja
Jakarta 12110 Indonesia

Dear Chairman,

DEFINITION AND SCOPE OF CHEMICAL ENGINEERING SERVICES
BRUNEI DARUSSALAM

In reference to the 54th ASEAN Chartered Professional Engineer Coordination Committee held in Penang, Malaysia between 11 and 15 February 2025, the Engineering Monitoring Committee of Brunei Darussalam hereby submit the Definition and Scope of Chemical Engineering Services.

For your perusal and necessary action.

Thank you.

Yours sincerely,

Dr. NOR IMTIHAN BINTI HAJI ABDUL RAZAK
Permanent Secretary
As Chairman, Board of Architects, Professional Engineers and Quantity Surveyors
Ministry of Development
Brunei Darussalam

Cc: The Honourable Minister of Development, Brunei Darussalam
Yang Mulia Permanent Secretary of Economy, Ministry of Finance & Trade, Brunei Darussalam
Attn: Director of Trade, MOFE

Divisyen Pengurusan Lembaga (BMD)
Tingkat Bawah, Bangunan Kementerian Pembangunan
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Ext 1016 / 1023

SCOPE OF WORK FOR CHEMICAL ENGINEERING SERVICES

SCOPE:

The professional services are to be provided to perform the feasibility study, to prepare the Basis for Design (BfD), to perform the basic and detailed engineering, and to provide assistance to precommission and startup. These services relate to design of a new facility or to perform alterations into the existing facility, and can be provided for any one or more than one facility from the list below;

1. Oil and gas production and processing facility
2. LNG plant, and associated process and utility units
3. Oil refinery, and the associated process and utility units
4. Petrochemical plant, and the associated process and utility units
5. Fertilizer plants and the associated process and utility units
6. Tank farms – storage and distribution of petroleum products
7. Hydrogen producing facility, its distribution and transport
8. Carbon capture and storage system

DETAILED DESCRIPTION OF EXPECTED KEY COMPETENCIES:

1) Performing process modelling simulations:

Select suitable software for model development. Considering the study scope, establish the boundary limits and thermodynamic model, and seek the essential inputs for the model development. Identify number of cases to accommodate the variation in the upstream and downstream operating conditions. Generate the heat and mass balance, and determine the required operating parameters.

If required, convert the steady state model into dynamic to estimate the minimum metal temperature, process safety time, time needed to pressurize or depressurize, and to calculate the available time for operator intervention, etc.

2) Performing process engineering calculations and equipment sizing:

Extract applicable recommendations from the technical standards to determine the equipment sizing criteria. Apply mass balance across each equipment and perform the sizing. Utilize these results for the process data sheet preparation. Perform necessary calculations to develop control and safeguarding philosophy covering the startup, shutdown, normal operation, minimum turndown and operation at maximum capacity, etc. Develop various scenarios which are required for sizing of the relief devices and to identify the governing scenario.

3) Specifying the design basis for process system safeguarding and protection:

SCOPE OF WORK FOR CHEMICAL ENGINEERING SERVICES

Establish coincidental minimum design pressure and temperature, and maximum design pressure and temperature of the involved piping and equipment. Perform the study to prevent overpressure, underpressure, overtemperature, undertemperature, and overflow. Develop the safeguarding philosophy covering the layers of protection such as control valves, alarm, trip, relief valve, etc.

Specify process safety time to achieve the performance of the proposed safeguarding and to provide the duration for the manual override during the start-up, etc.
Establish required shutdown levels as emergency shutdown (ESD), process shutdown level 1 (shutdown without depressurization), 2 (train shutdown), and 3 (equipment shutdown).

Identify the need of containment pits to prevent spillages of the hydrocarbon and the flammable liquids. Size them and mark in the respective deliverables.
Considering the facility location and its surroundings, specify a suitable type of disposal system (either a vent or flare). Perform the vent and flare system study and specify the system details.

4) Preparing the process engineering drawings:

Develop Process Flow Diagram (PFD), Piping and Instrumentation Diagram (P&ID), and Process Safeguarding Flow Scheme (PSFS).

Implement the outcomes from the lessons learnt from past incidents, process simulations, equipment and piping sizing, and various safety studies. Ensure completeness and consistency. Provide particular attention to safeguard the low pressure and high pressure piping interfaces.

5) Preparing technical reports:

Develop technical reports such as, process safeguarding memorandum, process operating and control philosophy, calculation reports, third party scope of work, and plant operating manual, etc.

Ensure that the prepared reports are consistent with the developed P&IDs, and the recommendations provided are clear and unambiguous.

6) Technical and non-technical activities related to projects:

Prepare manhour estimate for the defined scope, and provide regular updates on project progress. In case the desired progress is not achieved, then recommend the ways to recover.

SCOPE OF WORK FOR CHEMICAL ENGINEERING SERVICES

Review the basis for design, raise the queries, and seek their clarifications. Attend the P&ID approval sessions, clarify the queries raised by approvers and get the drawings approved.

Participate in the safety studies such as HAZID, HAZOP, SIL classification, etc. and close the applicable actions.

Review deliverables prepared by other disciplines. Provide inputs to other disciplines to prepare the cause and effect matrix, process and control narratives, basis for design, FEED report, etc.

During the procurement stage, perform technical bid analysis and provide recommendations. Review and approve the vendor drawings.
Coordinate to compile and document the lessons learnt.