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**PETRONAS RAPID PROJECT
(PACKAGE 14 - UTILITIES, INTERCONNECTING,
OFFSITE UNITS)**

SPECIFICATION FOR CONCRETE WORKS

OWNER Approval:	PRPC Utilities and Facilities Sdn. Bhd.
Name:	
Date (DD-MMM-YY):	
Signature:	

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HOLD's

HOLD No.	REF. §	DESCRIPTION	ACTIONS

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Specification for Concrete Works

1. PURPOSE

PETRONAS intends to build a world-class integrated refinery and petrochemical complex at Pengerang, Johor comprising a refinery of 300,000 barrels per day capacity, a naphtha steam cracker of 1.28 million tons of ethylene per year capacity, petrochemicals units, utilities and infrastructures: the RAPID PROJECT (Refinery And Petrochemical Integrated Development).

The purpose of this document is to define the guidelines for the preparation of the Job Specifications (JSP) and the Specifications (SPN), documents that shall define EPCM CONTRACTOR's requirements in terms of design, sizing, supply, fabrication, expediting, inspection & testing and/ or Construction and Commissioning for Civil Construction Specification for Concrete Works to be supplied and/ or constructed/ installed for the UIO PROJECT.

2. SCOPE

This specification covers the materials, strength and proportions, mixing, placing, finishing, curing and testing of reinforced structural concrete. Special requirements called for on drawings shall govern over the provisions of this specification.

Note: "This document shall be read in conjunction with Project Specification RAPI-FE1-TPX-CVS-SPN-0001-0004 and PTS 34.19.20.31. In case of discrepancies, these documents shall prevail".

3. REFERENCE DOCUMENTS

3.1 Supplement to PETRONAS Standards (PTS)

Applicable Supplement to PTS in this document as below:

DOCUMENT TITLE	DOCUMENT NUMBER (note 1)
Reinforced Concrete Foundation and Structure	PTS 34.19.20.31 Dated Nov. 2009
"Reinforced Concrete Foundation and Structure" - Supplement to PTS 34.19.20.31 Dated Nov. 2009	RAPID-FE1-TPX-SPN-0001-0004

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3.2 Project Document

DOCUMENT TITLE	DOCUMENT NUMBER
PROJECT DOCUMENTS:	
Project Procedure - Documentation Identification and Numbering	RAPID-P0014-OUI -PMG-PRC-0001-1002
Project Procedure - Glossary of Terms and Abbreviations	RAPID-P0014-OUI -PMG-PRC-0001-1006
Project and Guideline – Interfaces Identification and Numbering	RAPID-P0014-OUI -ENG-PRC-0001-6015

4. DEFINITIONS AND ACRONYMS

The following terms used in this document have the meaning defined below:

OWNER:	PRPC Utilities and Facilities Sdn. Bhd.
PLT:	Project Leadership Team of PRPC
IPMT:	Programme Manager (PMC)
SD4:	OWNER Representatives for UIO Package (Package 14)
EPCM CONTRACTOR:	OUI JV
Project or UIO Project:	EPCM of UIO Package 14 for RAPID PROJECT
EPCM:	Engineering, Procurement, Construction and Management
MT:	OUI JV Project Directorate Team
DEC KL:	Detailed Engineering Center located in Kuala Lumpur
DEC ML:	Detailed Engineering Center located in Manila
Subcontractor:	Party engaged by OUI JV to undertake part of UIO Services
Package Vendor:	Vendor engaged by OWNER to supply Equipment or Material
Package Contractor:	Contractor engaged by OWNER to undertake Package Works
Other Contractors:	Contractors engaged by OWNER to undertake other projects, part of the RAPID PROJECT.



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The acronyms used in this document have the meaning defined below:

- ASTM American Society for Testing and Materials
- BS British Standard
- BS EN British Euro Norms
- FEED Front-End Engineering Design
- MS EN Malaysia Euro Norms
- PTS PETRONAS Technical Standard

5. CODES AND STANDARDS

5.1 Applicable Codes & Standards

Applicable codes and standards to be followed are listed below:

BS 410-1	-	Test Sieves. Technical requirements and testing. Test Sieves of metal wire cloth.
BS 410-2	-	Test Sieves. Technical requirements and testing. Test Sieves of perforated metal plate.
BS 812-2	-	Testing Aggregates. Methods of determination of density
BS 812-101	-	Testing Aggregates – Guide to Sampling and Testing Aggregates
BS 1305	-	Specification For Batch Type Concrete Mixers
BS 1370	-	Specification For Low Heat Portland Cement
BS 1377	-	Methods of test for soils for Civil Engineering purposes
BS 1881-131	-	Testing Concrete. Methods for testing cement in a reference concrete.
BS 3963	-	Method for Testing the Mixing Performance of Concrete Mixers
BS 4027	-	Specification for Sulfate-Resisting Portland Cement
BS 4449	-	Steel for the Reinforcement of Concrete. Weldable reinforcing steel. Bar, coil and decoiled product specification.
BS 4482	-	Steel Wire for the Reinforcement of Concrete products specification.
BS 4483	-	Steel Fabric for the Reinforcement of Concrete Specification.
BS 4550	-	Methods of testing cement.
BS 5606	-	Guide to Accuracy in Building
BS 8500	-	Concrete. Complimentary British Standard to BS EN 206-1.



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BS 8666	-	Scheduling, dimensioning, bending and cutting of steel reinforcement for concrete specification.
BS EN 196	-	Methods of testing cement.
BS EN 206-1	-	Concrete. Specification, performance, production and conformity.
BS EN 450-1	-	Fly ash for concrete. Definition, specifications and conformity criteria.
BS EN 480	-	Admixtures for concrete, mortar and grout. Test methods.
BS EN 932	-	Tests for general properties of aggregates.
BS EN 933	-	Tests for geometrical properties of aggregates.
BS EN 1008	-	Mixing water for concrete. Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete.
BS EN 1011	-	Welding. Recommendations for welding of metallic materials.
BS EN 1097	-	Tests for mechanical and physical properties of aggregates.
BS EN 1744-1	-	Tests for chemical properties of aggregates. Chemical analysis.
BS EN 1992-3	-	Eurocode 2. Design of concrete structures. Liquid retaining and containing structures.
BS EN 1992-1-1	-	Eurocode 2. Design of concrete structures. General rules and rules for buildings.
BS EN 1997-2	-	Eurocode 7. Geotechnical design. Ground investigation and testing.
BS EN 10080	-	Steel for the reinforcement of concrete. Weldable reinforcing steel. General
BS EN 12350	-	Testing fresh concrete.
BS EN 12390	-	Testing hardened concrete.
BS EN 12504-1	-	Testing concrete in structures. Cored specimens. Taking, examining and testing in compression
BS EN 12620	-	Aggregates for concrete
BS EN 197-1	-	Cement, Composition, specifications and conformity criteria for common cements.
MS EN 1992-1-1	-	Malaysia National Annex to Eurocode 2: Design of concrete structure – Part 1-1: General Rules and Rules for Buildings



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5.2 Order of precedence

In case of conflict between Laws, Project Specifications and Codes & Standards, the following order of precedence shall be considered:

- 1. Malaysian Laws and applicable Regulatory requirements,
- 2. Project Specifications and supplemented PTS,
- 3. Applicable Malaysian Codes and Standards,
- 4. Applicable International Codes and Standards.

If a lower level requirement is more stringent than an upper one in the above list of documents, a request shall be raised by the PACKAGE VENDORS or THE PACKAGE CONTRACTORS to the EPCM CONTRACTOR for written decision before proceeding with the Design, Manufacture, Construction or Commissioning.

6. RESPONSIBILITIES

The PACKAGE CONTRACTOR is responsible for the complete design if any, construction, testing, packing and delivery of the supplied Civil Construction Specification for Concrete Works for the conditions and service (operation) specified in the PO or the PACKAGE CONTRACT.

Compliance with this Specification does not relieve the PACKAGE VENDOR or the PACKAGE CONTRACTOR of the responsibility to supply Construction Specification for Concrete Works which are durable, safe and reliable for the service (operation) specified in the PO or the PACKAGE CONTRACT.

Established Quality management system of PACKAGE CONTRACTOR shall comply with the applicable requirements of ISO 9001 for all the supplies, services and works (life cycle of supplies and operation) provided by them.

Any deviation to this Specification or other Project Specification listed in the Material Requisition or the PO (or PACKAGE CONTRACT) must be clearly highlighted by the PACKAGE VENDOR or the PACKAGE CONTRACTOR in the bid and shall be subjected to the EPCM CONTRACTOR's approval in writing.



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7. CEMENT

7.1 Ordinary Portland Cement

Unless specified to the contrary on Drawings or instructed in writing by the EPCM CONTRACTOR, the cement to be used throughout the work shall be Ordinary Portland Cement complying with BS EN 197-1 except:

- For below ground reinforced concrete works unless otherwise noted, the cement used shall be minimum Portland Cement with 6% to 20% fly ash (CEM IIA-V) per BS EN 197-1 or Portland Cement Type II as per ASTM C150.
- For marine structures, the cement type shall be Portland cement with 21% to 35% fly ash (CEM IIB-V) or CEM IIIA + SR with 36% to 65% ground granulated blast furnace slag as per BS EN 197-1.

7.2 Rapid Hardening Cement

Rapid Hardening Cement is to be used only upon the expressed instructions of the EPCM CONTRACTOR or his Representative. When its use is directed, it is to comply in all respects to BS EN 197-1 and to satisfy all tests therein.

7.3 Cement Additives

All additives to cement shall have the EPCM CONTRACTOR'S approval in writing before its use is permitted. Where approved, cement additives shall be used strictly in accordance with the manufacturer's instructions. Additives so used shall be at the PACKAGE CONTRACTOR'S own risk and expense. Concrete described as waterproofed shall be waterproofed with an approved type additives used strictly in accordance with the manufacturer's instructions.

7.4 Sampling

The EPCM CONTRACTOR shall have the right to require the PACKAGE CONTRACTOR at any time to draw samples of cement according to Clause 9, BS EN 197-1, and from location to be specified by the EPCM CONTRACTOR.

7.5 Tests

The cement samples shall be tested in accordance with those clauses of the relevant specifications as required by the EPCM CONTRACTOR who shall have the right to approve the laboratory in which the tests are to be performed. Certificates of tests of fineness, chemical composition, compressive strength, setting times and soundness shall be submitted with each consignment.

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/165021204341011042>