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ARAB ENGINEERING

1 GENERAL

1.1 RELATED DOCUMENTS & REGULATIONS

- 1 The information given in this Part is supplemental to QCS Section 1 - General. Reference should be made to Section 1 – General prior to referring to the clauses in this part of the specification which cover specific requirements for roadworks and are additional to Section 1 - General.
- 2 The Government specifications, regulations, notices, and circulars mentioned in QCS Section 1 – General are amended and complemented by this Specification as detailed hereafter. In the case of any ambiguity or discrepancy the provisions of this Specification shall prevail over the provisions of the aforementioned Government published specifications.
- 3 The purpose of QCS is to provide as a general technical guide for acceptable construction work practices in the State of Qatar, considering this; any addition for technology, material, specification, standard that are not mentioned in this section or their modification, shall be subject to approval as stated in the introduction of QCS (00-02)
- 4 For voltages and frequencies, regulations and requirements of Kahramaa and relevant authorities should be taken into account.

1.2 BENCH MARKS AND MONUMENTS

1.2.1 General

- 1 The Contractor shall consult the Survey Section of the Ministry of Municipality (MM) prior to any earthworks or site clearance to determine if the work is likely to disturb survey marks.
- 2 If the survey section require a survey mark to be moved the Contractor will be responsible for recreating the survey mark to an approved design and specification, and for re surveying the point using survey companies approved by the Survey Section.
- 3 On the Practical Completion of the Works the Survey Section will issue a certificate stating that all survey marks, whether disturbed or otherwise, by the Contractor have been reinstated or protected to the satisfaction of the Survey Section.
- 4 In the event of failure to comply with the requirements of this Clause the Government, without prejudice to any other method of recovery, may deduct the costs of any remedial work after the Practical Completion date, carried out by Survey Section from any monies in its hands due to or which may become due to the Contractor.
- 5 All pertinent levels, lines and locations must be checked and verified by the Contractor before commencing the Works.

1.2.2 Permanent Monuments

- 1 At the time of substantial completion of the whole of the works, a schedule and plan drawings of all remaining Project related and supplementary bench marks and monuments shall be prepared and transmitted to the Engineer. All project related bench marks and monuments made permanent as above will be shown on the as-built plans, including the co-ordinates and level information for each.
- 2 Certain bench marks and monuments determined by the Engineer shall be made into permanent bench marks and monuments.

- 3 Fabrication and installation of bench marks and monuments shall be as shown on the drawings or in the specifications and shall include attaching warning reflectors and painting if required. Each bench mark and monument shall be set accurately at the required location and elevation and in such manner as to ensure its being held firmly in place.
- 4 The Contractor may request the Engineer's approval for concrete monuments, markers and posts supplied by an established commercial manufacturer, whose capability of producing survey monuments has been well established by both testing and performance. Written approval shall be obtained prior to installation of the units on the project.

1.2.3 Setting Out

- 1 The level datum for the works shall be the Qatar Datum as defined by the PWA.
- 2 The works shall be set out to the Qatar national grid as defined by the PWA. The Contractor will be supplied with the details and grid reference of setting out monuments.
- 3 The works shall be set out in accordance with the standard specification of the PWA.
- 4 Before commencing the works the Contractor shall obtain from the Engineer all information pertaining to project related bench marks and monuments bearing local grid co-ordinates.
- 5 After the Contractor takes possession of the Contract Drawings and has noted all the existing bench marks, he shall carry out at his own expense the setting out of the works, definition of levels, centre lines and slopes, all in accordance with the Drawings.
- 6 The Contractor shall be responsible for the true and proper setting out of the work in relation to original points, lines and levels of references given in the Drawings and for the accuracy of the positions, levels, dimensions and alignment of all parts of the work, and for any delay or loss resulting from errors made in completing the setting out of the work.
- 7 The Contractor shall protect, preserve and be responsible for all existing bench marks, pegs and boundary marks and shall keep these in place or replace them when necessary either in their positions or in other approved positions.
- 8 Setting out shall be approved by the Engineer before commencing the Works, but such approval shall in no way relieve the Contractor of his responsibility for the correct execution of the works.

1.3 EXISTING GROUND LEVELS

- 1 The Contractor will survey cross-sections of the site prior to the commencement of works in any section.
- 2 The Contractor shall include in his critical path programme the date by which survey work should be completed in each section of the site. No works may commence in any section prior to the programme date without the written approval of the Engineer.
- 3 Sections will be prepared at such intervals as are necessary to give a representative record of existing conditions and in no case will the intervals exceed 50 metres.
- 4 The Engineer may choose to carry out his own survey of the site and in such cases will give the Contractor 48 hours notice of his intention to carry out survey work in any particular section of the Site.
- 5 The Contractor may nominate a representative to be present to observe the survey. If, having been given such notice, the Contractor fails to appoint a representative or if the representative should fail to be present during the survey work, the Engineer shall proceed with the survey which shall be deemed to have been prepared in the presence of the Contractor.

- 6 The Contractor shall prepare drawings showing the various cross-sections obtained from the above survey.
- 7 The original of the drawings shall be signed by the Engineer and the Contractor as an agreed record of the existing ground levels.
- 8 A copy transparency of each original drawing will then be given to the Engineer. These drawings shall be deemed to be the Contract Drawings replacing the original.

1.4 MATERIALS TESTING

- 1 Reference should be made to the requirements for the provision of facilities and equipment for the testing of materials given in Section 1.
- 2 In addition to these requirements the Contractor shall provide a fully equipped site laboratory or shall arrange for materials and samples to be transported to the laboratory for testing or otherwise specified by the Engineer or the Project Documentation.
- 3 In addition the Contractor shall provide suitable facilities at the asphalt batching plants to enable the Engineer to carry out all necessary tests on the raw materials and mixes. Such facilities will be subject to the Engineer's approval and the preparation of asphalt mixes shall not be allowed until the facilities have been approved by the Engineer.
- 4 Approved equipment shall be maintained on site at all times to:
 - (a) Determine the laying and rolling temperature of bituminous materials.
 - (b) Check surface tolerance by using a straightedge and wedges or rolling straightedge.
 - (c) Carryout soil grading shape, classification, moisture content and compaction tests, as required.
 - (d) Carryout in situ dry density tests.
 - (e) Carryout bitumen extraction.

- 5 Equipment shall also be made available when required by the Engineer to take 150 mm diameter cores from the carriageway.
- 6 The Engineer may require samples of materials to be delivered to the MOE for additional tests.

1.5 NUCLEAR DENSITY TESTING DEVICES

- 1 No person or company will be permitted to determine in-situ density by mean of a nuclear density measuring device without complying with the following regulations:
 - (a) Each device shall have a valid Calibration Certificate issued by the MOE.
 - (b) Persons operating the device shall hold a valid authorised user certificate issued by the MOE.
 - (c) During the operation of the device the person operating it and any assistants shall wear a suitable film badge or a personal radiation warning alarm. Copies of radiation exposure report of the film badges should be submitted on monthly basis to the MOE.

1.6 TEMPORARY FENCING

- 1 Temporary fencing shall be appropriate to the usage of the adjoining land and unless otherwise described on the drawings may be of a type selected by the Contractor taking into account the usage of the adjoining land subject to the approval of the Engineer.

- 2 As soon as the Contractor is placed in possession of any part of the site he shall immediately erect fencing on the boundaries of the land as shown on the Drawings. In places where permanent fencing cannot be erected immediately or where none is required, the Contractor shall erect, and when and where required re-erect and maintain, temporary fencing and subsequently take down and remove as necessary.
- 3 The Contractor shall not use barbed wire in areas accessible to the general public. Access shall be made in temporary fencing as necessary for the use of the occupiers of adjacent lands.
- 4 If temporary fencing is removed temporarily for the execution of any part of the Works it shall be reinstated as soon as possible and in the meantime, subject and without prejudice to the Conditions of Contract, the gap in the fencing shall be patrolled so that no unauthorised entry onto adjoining land takes place.
- 5 Temporary fencing shall remain in position either until it is replaced by permanent fencing or until its removal on completion of the Works, unless otherwise described in the contract or directed by Engineer.

1.7 ROAD OPENING

- 1 Road openings shall be carried out in accordance with the procedures laid down in The Code of Practice and Specification for Road Openings in the Highway.
- 2 Newly compacted bituminous courses shall not be opened to traffic until they have cooled to ambient temperature. Longer periods may be applied during the summer months for heavily trafficked roads at the discretion of the supervising engineer

1.8 CONCRETE WORKS

- 1 All concrete works shall be carried out in accordance with the requirements of Section 5.
- 2 Concrete works shall include; mass concrete, reinforced concrete, in-situ concrete, precast concrete and prestressed concrete.
- 3 Concrete works shall be deemed to include reinforcement, formwork and all the other materials procedures and requirements covered by Section 5 - Concrete.

1.9 STANDARDS AND CODES OF PRACTICE

- 1 The standards, codes of practice and other reference documents referred to in the roadworks section of the specification are listed in the first clause of each of the parts of the specification.
- 2 Unless otherwise agreed with the Engineer a full set of these documents shall be provided by the Contractor within 30 days of the commencement of the contract. These documents shall be kept at the site and shall be available at all times for the use of the Engineer and his staff.

1.10 TRAFFIC MANAGEMENT

- 1 The Contractor shall comply with all instructions given by the Qatar Traffic Police in relation to traffic management and road safety.

1.11 ARMED FORCES

- 1 The Contractor shall comply with all reasonable instructions given by the Qatar Armed Forces to allow them access to the Works and with the PWA.

END OF PART

ARAB ENGINEERING BUREAU