

PART 1 / 2
GENERAL REQUIREMENTS

GENERAL CONDITIONS:

1. Notwithstanding the information contained herein, the Contractor shall be responsible for complying in all respects with the contract documentation and specifications and all bylaws and regulations imposed by authorities having jurisdiction, as may be in force at the time of execution of the Works
2. The Contractor shall provide and do everything necessary for the proper execution of the Works according to the intent and meaning of the Tender, and Drawings and Specification, whether the same may or may not be particularly shown on the Drawings or included in the Specification provided that the same is reasonably inferable.
3. The Works shall be completed in strict accordance with the Drawings and Specification and any further drawings or instructions issued or approved by the Employer during the execution of the Works.
4. the work to be performed under this Contract includes, but is not necessarily limited to, the furnishing of all supervision, labor, materials, temporary works, temporary utilities, false-work, equipment, parts, tools, taxes, duties, commissions, supplies, transportation, utilities, construction facilities, incidentals and logistic support necessary for the performance and maintenance of the Works, accomplishing the same in a workmanlike manner.
5. All work shall be executed by skilled tradesman who shall be thoroughly acquainted with all aspects of their trade including any special local customs and modes of operation.
6. The Contractor shall be deemed to have based their tender on the information in respect of hydrological, physical and climatic conditions of the site and have inspected the site and its surroundings and satisfied himself before submitting the tender. Visits to the Site to review the existing conditions shall be strictly by agreement with the Project Manager.
7. The Employer and any person authorized by him shall at all times have access to the Works and to the Site and to all workshops and places where work and/or material or equipment is being obtained and/or undertaken for the Works.

CONTRACTOR USE OF PREMISES

1. All construction operations and site establishment facilities shall be confined to within the Site boundaries as shown on the Drawings unless otherwise agreed with the Consultant/Client. The Contractor shall be responsible for providing and maintaining access roads on site.
2. The Contractor shall be responsible for safeguarding all structures and the like in the vicinity of their works and the Site. Also the contractor shall ascertain from the public utility authorities' positions of all existing underground services and the contractor shall maintain and protect or divert as required.
3. The Contractor shall have possession of the Site at the location of the Works only and be responsible for arranging their own working space, the storage of materials, siting of all temporary accommodations, utilities and other logistical issues at locations to be agreed with the Consultant/Client. No claim whatsoever will be entertained for any reason regarding the siting, allocation or relocation of any working space regardless of the distance.

OCCUPANCY:

1. The elevations of the Site indicated in the Drawings shall be verified by the Contractor and no guarantee can be made that the elevation details shown on the Drawings are accurate.
2. The Contractor shall inspect and examine the site and its surroundings and shall satisfy themselves before submitting their Tender as to the nature of the ground and sub-soil, the quantities and nature of the Works and materials, tools and equipment necessary for the completion of the Works.
3. The information and details given on the Drawings are not guaranteed to be accurate or correct and are given for guidance in compiling the Tender. The Contractor shall undertake their own investigations and inquiries to the Kosti Municipality, other authorities and utility companies to ascertain the exact positions, sizes, numbers and details of all obstacles to be encountered.
4. The rates given in the Tender shall include for all costs involved in negotiating obstacles and no claim will be considered for additional expenses the Contractor may incur on account of any unforeseen obstacle of whatever nature, over and above those which would have been incurred had the existence of the obstacle been known at the time of preparing the contract Drawings.
5. The Contractor shall obtain all further information required as to the risks, contingencies and other circumstances, which may influence or affect the execution of the Works and include the costs thereof within their Tender.

INSPECTION TESTING ALLOWANCES

1. The Contractor shall allow within their rates quoted for all cost and time for carrying out all tests on the works required by the Specification.

SETTIG OUT

1. After the Contractor is handed the Drawings and after noting all the existing permanent bench marks, they shall carry out at their own responsibility and expense the setting out of the work, definition of levels and setting out lines, axes and slopes, all in accordance with the Drawings.

2. 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. The Contractor shall protect, preserve and be responsible for all existing bench marks, pegs and boundary marks and shall keep them in place or replace them when necessary or as directed by the Consultants either in their original positions or in some other approved positions.

3. Setting out shall be approved by the Consultant before commencing the works, but such approval shall in no way relieve the Contractor of their responsibility for the correct execution of the work.

4. The Contractor shall:

a) Set out the works using methods and necessary instruments and international Codes of Practice for Accuracy in Building.

b) Check the levels and dimensions of the Site against those shown on the Drawings and record the results on a copy of the Drawings.

c) Notify the Consultant in writing of any discrepancies and obtain written instruction before proceeding.

d) Inform the Consultant and obtain their approval when overall setting out is complete and before commencing construction.

NON-COMPLIANCE

1. Where work fails to meet the specified levels of accuracy the Contractor shall not rectify such work without approval of the Consultant.

2. The Contractor shall:

a) Submit proposals for such rectification and meet all costs arising, including effects on other work.

b) Allow for the possibility that approval will not be given necessitating removal and replacement of the work.

PROGRESSES MONITORING AND REPORTING

1. The Contractor shall update the current approved program with actual executed information and submit in the form of periodic reports. This section describes the requirements, the form and content of such reports.

2. DAILY REPORTS:

The Contractor shall submit this report on a daily basis. The report shall describe the labor force and its allocation, material, construction equipment and the work to be carried out during the day. The format and the number of copies of this report shall be agreed with the Consultant/client prior to use.

3. WEEKLY REPORTS:

The Contractor shall prepare weekly reports and submit to the Consultant/client on each Sunday for the previous week, except for the last week of each month which will be covered in the monthly report. The cut-off date or data date for this report shall be the Friday of the previous week. The weekly report shall consist as a minimum, updates of actual progress information, actual utilization of manpower, Quantities and construction equipment, updated material delivery schedule and status of submissions. Report should clearly indicate the activities planned, achieved and to be done for the next week. The format for the Weekly Report shall be as described in the following Sub-clauses.

4. MONTHLY REPORT:

The Contractor shall prepare monthly reports and submit to the Consultant/Client on or before 25th day of each month for the previous month. The cut-off date or data date for this report shall be the last calendar day of the month. The monthly report shall essentially be an update of the Program of Works and weekly report.

PART 2/ 2

SPECIFICATIONS

PRELIMINARY EARTHWORKS:

1. Definition, Classification and General Use of Earthwork Materials.

(a) The following definitions of earthworks materials shall apply to this and other Clauses of the Specification in which reference is made to the defined materials.

(b) 'Top Soil' shall mean the top layer of soil that can support vegetation.

(c) 'Suitable materials' shall comprise all that which is acceptable in accordance with the Contract for use in the Works and which is capable of being compacted in the manner specified in Clause 0210 to form a stable fill.

(d) 'Unsuitable material' shall mean other than suitable material and shall include:

(i) logs, stumps and perishable material;

(ii) material which is incapable of being compacted by permitted methods;

(iii) materials having a moisture content greater than the maximum permitted for such materials in the Contract, unless otherwise permitted by the Engineer

(iv) Materials from swamps, marshes or logs

(v) Organic soil including top soil

(vi) Peat, stumps or perishable materials

(vii) Material susceptible to spontaneous combustion

(viii) Soil of liquid limit exceeding 35% and plasticity index exceeding 10%

(ix) Material which is not well graded and with uniformity coefficient < 3

(x) Materials having hazardous and/or unacceptable chemical and/or physical properties

(xi) Other prescribed material described in the Contract or as defined by the Consultant

(xii) Sabkha soils

(xiii) Material having a total water-soluble chloride content $> 2\%$

(xiv) Material having a soluble sulphate content exceeding 1.9 g/l as SO₃ in 2:1 water to soil extract

(e) 'Rock' shall mean limestone, sandstone or similar material but excluding cemented sands, loose screed and gravel or boulders of less than 0.5m. The Engineer shall decide what material constitutes rock and his decision shall be final. Page 3 of 98

(f) 'Rock fill' shall consist of hard materials of suitable size for deposition and compaction and may comprise rock as defined in this Clause, broken stone, hard brick, concrete or other comparable hard inert material.

(g) 'Soft material' shall mean suitable material with the exception of rock fill.

(h) 'Hardcore' shall be hard stone, concrete or coarse gravel free from rubbish and other foreign matter, all capable of passing a 150mm ring in every direction, compacted in accordance with Clause 0305 of the Specification.

(j) 'Select Fill' shall consist of 'Suitable materials' arising from general excavation.

(k) 'Foundation' shall mean the surface of the ground after completion of all excavations.

(l) 'Formation' shall mean the surface of the ground in its final shape after the completion of the earthworks.

2. No excavated suitable material other than that surplus to requirements of the Contract shall be removed from the Site except on the direction or with the permission of the Engineer. Should the Contractor be permitted to remove suitable material from the site to suit his operational procedure, then he shall make good at his own expense any consequent deficit of filling arising there from.

3. If any suitable material excavated from within the Site is, with the permission of the Engineer, taken by the Contractor for a purpose other than the forming of embankments and other areas of fill, sufficient suitable filling material to occupy, after full compaction, a volume corresponding to that which the excavated material occupied shall, unless otherwise directed by the Engineer, be provided by the Contractor from his own resources.

4. Suitable material and top soil surplus to the total requirement of the Works and all unsuitable material shall, unless the Engineer permits otherwise, be run to spoil in tips provided by the Contractor. 5. Where the excavation reveals a combination of suitable and unsuitable materials the Contractor shall, unless otherwise agreed by the Engineer, carry out the excavation in such a manner that the suitable materials are excavated separately for use in the Works without contamination by the unsuitable materials.

6. Unless otherwise described in the Contract, all topsoil to a minimum depth of 200mm shall be removed from the areas of cut and fill and, unless surplus to requirements, stockpiled for re-use for the soiling of slopes of cuttings and embankments, berms, verges, central reserves and for the provision of beds for the cultivation of trees and shrubs.

7. The Contractor shall make his own arrangements for stockpiling of topsoil and/or suitable material, and for the provision of sites for the purpose. The permission of the Engineer is necessary for proposed stockpiles within the Site Area.

8. Surplus material shall be disposed of to approved tips, the location of which shall be agreed with the Engineer.

9. Before commencing any excavation or filling, the Contractor shall take cross-sections through the Site with levels at agreed intervals and shall agree these with the Engineer. Should the Contractor fail to comply with this Clause, then the Engineer's sections and levels shall be used for measurement purposes.

SELECTION OF MATERIALS:

Backfill Material for Structures, Foundation Pits, Trenches and Retaining Walls

1. Unless otherwise shown on the drawings or directed by the Consultant, all filling for this purpose shall consist of the material deposited and compacted by permitted plant in accordance with specification. Timber sheeting and other excavated supports shall be carefully removed as the filling proceeds except where they are required by the Contract to be left in position, but the removal of such supports will not relieve the contractor of his responsibilities for the stability of the works.

2. Material shall comply with the requirements of structural fill where it supports the works above, and non-structural fill elsewhere.

3. Any fill material used within 1.0 meters of concrete structures or cement-bound materials shall not have a water-soluble sulphate content exceeding 1.9 g/l as SO₃ in a 2:1 water to soil extract, nor shall it contain any chemical in sufficient concentration that it would have a deleterious effect on concrete or cement-bound material, in the opinion of the Consultant.

COMPACTION OF SUITABLE MATERIAL AS FILL

1. All materials used in embankments and as filling elsewhere shall be compacted as soon as practicable after deposition. Compaction shall be undertaken to the requirements of this Clause by permitted plant, such as smooth and pneumatic tired rollers, vibrating rollers, plate compactors or power rammers. Earthmoving plant shall not be accepted as compaction equipment under this Clause.

2. (a) At the time of compaction, the moisture content shall be such that the specified relative compaction will be obtained.

(b) All suitable material available from the areas of cut, 60% or more of which passes a 20mm BS sieve, shall be compacted to not less than 95% of its maximum dry density measured.

(c) Suitable material, more than 40% of which is retained on a 20mm BS sieve, shall be compacted, after watering as necessary, until no further compaction takes place, to the satisfaction of the Engineer.

3. Compaction can be carried out using smooth wheeled rollers, vibrating rollers, vibrating plate compactors or power rammers. In certain cases, pneumatic tyres rollers will be allowed. The maximum depth of the compacted layer, the number of passes and the speed of the machine will be determined from the manufacturer's recommendations and also, if necessary, by the result of tests in trial areas.

4. On completion of the works the Engineer shall, in company with the Contractor, inspect the works. If in any area the level of compaction, though previously complying with the Specification, has deteriorated for any reason such that it no longer complies with this Specification, this shall be made good at the expense of the Contractor.

5. The Contractor shall mix trial batches of the above materials to establish the proportioning necessary to achieve the specified overall grading

6. The Contractor shall carry out tests to BS 1377 to assess the liquid limit, plastic limit and plasticity index of the mixed material and determine the maximum dry density by Test 134 of BS 1377 (4.5kg rammer method).

7. The maximum dry density and optimum moisture content for suitable material obtained from the areas of cut shall be determined under engineer specifications.

CONCRETE

- MAKING CONCRETE:

Composition of mixes, production of concrete, information to be provided, sampling, testing and compliance to be in accordance with BS 5328 or relevant ASTM unless otherwise specified herein.

- MIXING CONCRETE:

1. The reinforced concrete works have been designed generally in accordance with the recommendations of BS 8110 and the Contractor shall comply with the recommendations of this British Standard unless specifically excluded or modified thereafter.

1. The Contractor shall submit details of the mixers he proposes to use, including the manufacturer's name, type of mixer and estimated output.

2. Mixers shall be of sufficient mixing capacity to provide the required output without overloading.

4. The setting of mixing plant on the site shall be agreed with the Engineer.

5. During concrete production mixers that have been out of use for more than 30 minutes shall be thoroughly cleaned out before mixing restarts.

6. Water measuring equipment's shall be calibrated before production starts and shall be checked at weekly intervals.

- TRANSPORTING CONCRETE:

The concrete shall be discharged from the mixers and transported by means which shall be agreed by the Engineer and which shall prevent contamination (by dust, rain or other cause), segregation or loss of ingredients. The means of transport shall ensure that the concrete is of the required workability at the point and time of placing and is transported and placed with the minimum of delay.

- CONCRETING AT NIGHT:

Where approval has been given to carry out concreting operations at night, the Contractor is to provide adequate lighting to all points where mixing, transportation and placing of concrete are in progress.

MATERIALS

- CEMENT:

The cement to be used throughout the Works shall be Portland Cement obtained from manufacturers approved in writing by the Engineer. BS12, ASTM C 150, ASTM C 1240 etc.

0202 STORAGE OF CEMENT:

1. The cement shall be delivered to site in bulk or in sound, properly sealed and marked bags and while being loaded or unloaded and during transit to the concrete mixers, whether conveyed in vehicles or by mechanical means, shall be efficiently protected from the weather by fully enclosed transfer systems or in the case of bagged cement by tarpaulins or other effective coverings.

- AGGREGATE SOURCES:

1. Aggregate for concrete, mortar or for other purposes shall be in all cases free from earth, clay, loam, soft clayey shaley or decomposed stone, organic matter and other impurities and shall be hard and dense.

2. Aggregate for use in concrete shall conform in all respects with BS 882: 1992 "Specification for aggregates from natural sources for concrete" and BS 1199 and 1200: 1976 (1996), except where specifically stated otherwise below. Alternatively, ASTM C33/C33M-08 can be referred

3. Sand for use in mortar shall conform in all respects with BS 1199 and 1200 "Specifications for building sands from natural sources". Alternatively, ASTM C40-04, ASTM C144-04 etc.

- WATER:

For mixing and curing concrete and mortar, water shall be fresh and free from all sediment and dissolved or suspended matter which may be harmful to the manufacture of concrete as specified and shall comply with the requirements of BS 3148/ASTM C94.

- STEEL FOR REINFORCED CONCRETE:

1. Steel reinforcement, other than steel for prestressing, used in reinforced concrete shall comply with the following British Standards as appropriate:

BS 4449 Specification for carbon steel bars for the reinforcement of concrete.

BS 4466 Specification for scheduling, dimensioning, bending and cutting of steel reinforcement for concrete.

BS 4482 Specification for cold reduced steel wire for the reinforcement of concrete.

BS 4483 Specification for steel fabric for the reinforcement of concrete.

BS 8110 Structural use of concrete.

ASTM A 706M – Low alloy steel deformed bars

ASTM A 615M – Deformed and plain Billet steel bars for concrete

- Class of Concrete:

Class of concrete	Min. Strength (N/mm²)	Max. water/cement ratio	Min. cement (Kg/m³)	Max. Size of Aggregate (mm)	Slump (mm)
A (PC)	20	0.5	250	As per approved mix design	
B (RC)	30	0.5	350		

- CURING OF CONCRETE:

Immediately after compaction and for 7 days thereafter all concrete shall be protected against harmful effects of sunshine, drying winds, cold, rain or running water to the satisfaction of the Engineer. During this period the measures given in Sub-Clause 3 of this Clause shall be taken to prevent the loss of moisture from the concrete and to minimize thermal stresses caused by the difference in temperature between the surface of the concrete and the core of the concrete mass

STEEL STRUCTURES

General:

Provide all labor, materials, plant and equipment to complete the structural steelwork indicated on the drawings and specified herein.

Quality Assurance:

- (a) Fabricate structural steel members in accordance with BS 5950 or AISC Code of Standard Practice.
- (b) Perform Work in accordance with AISC Section 10.

Fabrication:

- (a) Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- (b) Fabricate connections for bolt, nut and washer connectors.
- (c) Fabricate glazing elements for canopies to suite correct measurements.

Corrugated Sheets:

Panels are made up of one sheet steel high rib. The skin is 0.7 mm thick. steel conforming to ASTM-A-792 Grade 50. The skin is Preprinted pre-hot dip galvanized with (150 G/m² both sides).

WALLS & PARTITIONS

Brickwork:

Bricks shall be obtained from sources approved by the Engineer. All bricks shall be new clean, hard sound and well burnt, equal in size, straight and sharp in the arises. The color shall be red but uniformity of color is not essential provided that fair faced work is of uniform general appearance. Fair faced quality bricks are to be used even where fair faced brickwork is not required because the initial grading classifies the better quality of bricks as fair faced. Bricks delivered to the Site or distributed to different parts of the Site shall be unloaded by hand and not tipped.

Cement, Sand & Water:

Cement and water shall be as specified for concrete work. Sand shall be to BS1200.

Mortar:

Mortar for brickwork shall be made of one part of cement to four parts of sand by volume (cement shall be taken as 0.035 m³ per 50 kg bag). The mortar shall be machine mixed or, with the approval of the Engineer, mixed by hand labour on a specially prepared mixing floor. Cement mortar shall be protected from the sun and wind by a wet hessian cloth and shall be used, within one hour of mixing. Any mortar not used within one hour of mixing shall be discarded and not used in the Permanent Works. With the approval of the Engineer and in work not under water, lime may be added to the mix to improve workability and to increase the permitted time for use. Mortar for masonry shall be as for brickwork.

Course Heights:

The Engineer's instructions shall be obtained and followed with regard to the height of courses for brickwork but in general course height shall be 75mm approximately and mortar joints 10mm approximately; The courses shall be set out so that bed joints are in line with features and cut courses shall be avoided as far as possible. Course heights shall not vary throughout any work and each course shall be level throughout. Levels shall not be made up by varying the thickness of mortar joints without the approval of the Engineer. To avoid cut courses the Engineer may

approve deviation from the Drawings in which case no additional payment will be made to the Contractor on account of variation may solely to avoid cut courses.

Workmanship of Brickwork:

Concrete foundations or concrete floors to receive brickwork shall be cleaned of earth, dust, debris etc. and shall be wetted before bricks are laid. Where brickwork beds or butts against concrete and there is no provision for a joint the concrete shall be brushed to expose the aggregate after the initial set of the concrete or immediately after the Formwork. is stripped. If this cannot be done satisfactorily the surfaces shall be hacked back to ensure that there is a bond between the brickwork mortar and the concrete. Immediately before being laid bricks shall be thoroughly soaked in clean water and before continuing partly completed work the exposed bed joint shall be likewise soaked. Brickwork shall be carried up evenly and uniformly, no one portion being raised more than 900 mm above the other at any time. No face work shall be built overhand. Single frog bricks shall be laid with the frog up. Bricks forming reveals and intern and external angles shall be specially selected for square edges and shall be built plumb. Brickwork in solid walls shall be in Flemish or other approved bond and each course shall break joint correctly with bricks of the previous course. The courses shall be laid level and with parallel, neat and regular joints. Joints shall generally be not more than 10 mm thick in the beds. Perpendents shall be truly kept.

Fixing Doors :

The frames for main access doors shall be built in. The Contractor shall build in, before or after completion of the brickwork, the frames of doors and windows with a 3 mm clearance all round from the finished brickwork. Fixing lugs shall be built in fixed in raked courses or fixed to hardwood dovetailed blocks.

PLASTER WORK

Materials

Cement:

The cement used for plaster shall be Ordinary Portland Cement as specified. Unless otherwise mentioned or instructed by Engineer.

Sand:

The sand for plastering shall be clean, well-graded, fine sand and shall be chemically and structurally stable and generally in compliance with B.S. 199:1976.

The sand should be sieved and graded in accordance with the Table (1) of Sand Grading given here in:

Table (1) Grading of Sand

BS Standard		% Passing (by Wt.) for Type of Coat	
No.	Size (mm)	undercoat	Finish Coat
7	2.4	95 - 100	100
14	1.2	80 - 95	95 - 100
25	0.6	30 - 55	30 - 85
52	0.3	5 - 50	5 - 50
100	0.15	0 - 10	0 - 10

Lime:

If necessary, Imported or local lime shall be of hydrate type, complying with Class B of British standard 890.

Gypsum:

Gypsum shall comply with the requirement of B.S. 119:1955 and shall be delivered in original sealed packages or containers bearing the name of the manufacturer, brand, & production date - to sample subject to Engineer's approval.

Workmanship:

All faces except circular work shall be true and flat and angles shall be straight and level or plumb. Plastering shall be neatly made good up to metal frames and skirting's and around pipes or All plastering shall be executed in a neat skilful manner.

fittings. Angels shall be rounded to 5 mm radius.

All tools, implements, vessels and surfaces shall at all times be kept scrupulously clean and strict precautions shall be taken to prevent the plaster or other materials from being contaminated by pieces of partially set material which would tend to retard or accelerate the setting time.

All "surfaces to be plastered shall be clean and free from dust, loose mortar and all traces of' salts. All surfaces shall thoroughly spread with water and all free water allowed disappearing before plaster is applied.

Before plastering is commenced, all junctions between differing materials shall be reinforced. This shall apply where wall join column, and similar situations where cracks are likely to develop and as directed by the Engineer. The reinforcement shall consist of a strip of galvanized wire mesh (10 to 15 mm hexagonal mesh) 150 mm wide which shall be plugged, nailed or stapled as required at intervals not exceeding 50 cm at both edges. On the same way, they shall apply to plastering of grooves for electrical conduits or other services.

Plaster Internally:

Internal plastering shall be applied with a minimum total thickness of 20 mm on vertical surfaces and 15 mm on ceilings or as provided for in the Bill of Quantities.

The Plastering mix shall be 250 kg cement to 1 m³ of sand and shall be finished hard and smooth with wood float thickness 15 mm.

Plaster Externally:

The Plastering mix shall be 250 kg cement to 1 m³ of sand and shall be finished hard and smooth with wood float.

Measurements:

Measurement for plastering shall be in square meter as per Bill of Quantities. Unit rates to include all requirements for a complete finished work. All openings with a single area equal to or more than 2 m² shall be deducted. Reveals of the same shall be measured and paid for as per rate in the BoQ.

Guarantee/Warranty:

(a) All warranties/guarantees to be issued by the Supplier, Manufacturers and Sub-Contractors shall be countersigned by Main Contractor and both of them will be liable for repair/replace the items/works, etc., during the warrantee/guarantee period.

Execution:

Inspection:

(a) Thoroughly examine surfaces scheduled to be painted prior to commencement of work. Report in writing to The Engineer, any condition that may potentially affect proper application, do not commence until such defects have been corrected.

(b) Correct defects and deficiencies in surfaces which may adversely affect work of this section.

(c) No priming coats shall be applied until the surface has been inspected and the preparatory work has been approved by the Engineer. No undercoats or finishing coats shall be applied until the previous coat has been similarly inspected and approved.