

GENERAL REQUIREMENTS

1. GENERAL

1.1 Reference to other Chapters

Throughout the Technical Specifications and Bills of Quantities, references are occasionally made to other sections. All such references are intended solely for the convenience of those using the documents, and the absence of a reference in no manner excludes the application of every other section in the Specifications which may, in the opinion of the Engineer, have any bearing upon the point in question, the intention being that the Contract Documents shall be read and applied as a whole.

1.2 General Scope of works

The Contractor shall furnish, except as otherwise expressly provided in the Contract, all materials, equipment and labour to complete the work in accordance with the terms of this Contract, Conditions of Contract, Technical Specifications, Bill of Quantities and drawings.

Without in any way limiting the scope of the foregoing, the work shall include all necessary clearing and grubbing; excavation; backfilling; ditching; sheeting; shoring, bracing and supporting; preparing and maintaining access roads; surveying and field investigations; supplying, transporting and installing necessary material and equipment; testing and supplying and placing all construction materials necessary to up-grade and/or restore monument and its area including all associated works as specified herein and as indicated on the Contract Drawings [if any] within the terms of this Contract.

The Contractor shall also furnish all equipment, tools, labour and materials to support, protect, and maintain all existing features and structures. He shall also repair all damage to such utilities, features and structures as may be caused by his operations under this Contract. During the works removal and disposal of all excess materials, and on the completion of construction the Contractor shall leave the entire work in a clean and orderly condition to the satisfaction of the Engineer.

2. CONTRACTOR TO INVESTIGATE

No plea for ignorance of conditions that exist or that may thereafter exist or of conditions or difficulties that may be encountered in the execution of the work under this Contract as a result of non-cognizance of local conditions, laws and regulations and/or failure to make the necessary examinations and investigations shall be accepted as an excuse for any failure or omission on the part of the Contractor to fulfil his contractual obligations and in every detail all the requirements of the said Contract Documents, or shall be accepted as a basis for any claims whatsoever or for extension of time.

The Contractor shall examine the Tender Documents and make personal examination of the site in order to acquaint himself with the conditions under which he shall be obliged to work and with the nature and the requirements of the work to be performed prior to submission of Tender.

The Contractor shall also make all the investigations necessary to thoroughly inform him regarding all facilities for access to the site, characteristics of the site, and he may require for his construction operations. The conditions affecting the supply of labour, water, electricity for temporary lighting and power as well as any local regulations and restrictions and generally any matters which may affect his tender as no claim on the ground of lack of knowledge in any respect will be entertained.

3. SITE CONDITIONS – GENERAL COORDINATION

3.1 General

The Employer does not guarantee the correctness of the designations of any materials described in this Clause and elsewhere nor any interpretations, deductions or conclusions relative to site conditions.

3.2 Climate

Cyprus has a typical Mediterranean climate with a marked seasonal variation characterized by wet winters and very low rainfall during the summer months of June to September. January and February tend to be the coldest month; the hottest months are July and August which display average daily temperature values above the thirties.

3.3 Protection and diversion of existing services

The Contractor shall be responsible for notifying the service authorities and the Engineer of his intention to expose the services and where so required by the service authority shall not commence operations until the service authority is represented on Site.

The Contractor shall excavate, protect until backfill and backfill in a manner so as not to damage the services. As soon as a service is encountered in the excavation whether previously located or discovered during the course of excavation for the Permanent Works the Contractor shall forthwith call the attention of the Engineer and the appropriate service authority thereto. The Contractor shall be responsible for maintaining all such services including natural and artificial watercourses encountered by him in the construction of the Works and shall make good any damage caused directly or indirectly by his activities.

3.4 Traffic Arrangements

The Contractor shall seek information on and comply with all requirements and recommendations of the police regarding traffic safety measures. The Contractor may arrange alternative temporary access with the owners and occupiers of properties and shall submit details of such agreed temporary access arrangements where necessary.

3.5 Disposal of surplus excavated materials

Surplus excavated material and debris arising from the Works shall be dumped on agreed disposal sites at the expense of the Contractor. The Contractor shall indemnify the Employer against any claims arising from unauthorized disposal of such materials.

3.6 Water Control

Without prejudice to other stipulations in the Contract, all constraints related to the presence of or risks caused by water, all additional work which may prove necessary on this account, all damage caused by water, all pumping in all structures not mentioned in the Contract which the Contractor may find he has to build for water control purposes shall be at the expense of the Contractor.

Without prejudice or other stipulations in the Contract, the Contractor shall be responsible for all damage caused to the foundations of the structure or any part of the Works and occasioned by floods, surface water or runoff, or by failure of any part of the diversion or protection works carried out by the Contractor. Any repairs that are necessary will be carried out at his own expense.

Before any works are begun, the Contractor shall submit to the Engineer's approval the methods and arrangements he proposes to apply in order to protect the Works, unless these are imposed by the specifications and designs incorporated in the Contract documents. Such approvals shall not relieve the Contractor of his obligations and responsibilities under this Section.

4. REGULATIONS

The Contractor shall comply with all provisions of the rules, regulations and orders of local authorities, utilities and the Employer applicable to the work under the Contract. The Contractor shall co-operate with the all relevant entities in promptly furnishing any information that may be required by such entities. It shall be the obligation of the Contractor to keep himself informed of these rules, regulations, and orders and the Contractor shall make the requirements of this article a part of any sub- contract he may enter into. The Contractor is to allow in his prices for complying with local regulations with regard to access to and from the site.

5. STANDARDS, CODES AND ABBREVIATIONS

General Standard specifications and codes of the following listed authorities wherever cited herein are referred to by use of the abbreviations shown below. All materials and workmanship shall comply with requirements of applicable codes. The following abbreviations are used in these Specifications:

E.N	European Standards
CYS	Cyprus Standards
B.S.	British Standards
T.S.	Turkish Standards
D.I.N	German Standards [Deutsches Institute fur Normung]
A.C.I	American Concrete Institute
A.N.S.I	American National Standard Institute
A.S.T.M.	American Society for Testing of Materials
I.S.O	International Standard Organization

Where reference is made to a Specification it is understood that the latest revision thereof shall apply.

6. DRAWINGS AND SPECIFICATIONS

The works are to be built of the materials and to the sizes, dimensions and grades as called for in the Specifications and Contract Drawings and such other Drawings as may be added from time to time by the Engineer during the progress of the works. The only drawings referred to in these Specifications are the drawings annexed to the Contract.

Additional working drawings showing details in accordance with which the works are to be constructed will be furnished from time to time by the Contractor and shall then become a part thereof after approval of the Engineer. The Contractor shall be governed by figured dimensions, as given on the Drawings. Where required dimensions are not shown in figures, the Contractor shall obtain such portion of the work to which they refer.

7. SUBMISSION OF WORKING DRAWINGS, "AS BUILT" DRAWINGS BY CONTRACTOR

7.1 WORKING DRAWINGS

For the portions of the works done under this Contract, where detailed drawings are to be supplied by the Contractor, a copy of same plus as many copies as the Contractor may require for his own use with Specifications shall be submitted to the Engineer for review. All drawings shall be in the English language, and all dimensions shall be in Metric system. Symbols shall be in accordance with approved Standards. All drawings submitted for approval shall conform to ISO paper sizes and recommended to be traced on A1 (840 mm x 594 mm) and/or A3 (297 mm x 420 mm) size paper. Title block and numbering shall be approved by the Engineer.

7.2 Additional Drawings

In addition the Contractor shall prepare and deliver to the Engineer prior to construction for information the drawings for:

- performance of the Works as necessary for showing the construction methods,
- detailed drawings of concrete reinforcement and calculation works, as well as bar bending schedules,
- detailed drawings necessary for the performance of each part of the Works in accordance with the Contract.

7.3 Submission and approval

The Contractor shall submit in one hard copy and one electronic copy to the Engineer, for review, information or approval, all brochures, designs and drawings which has to be prepared by the Contractor (except for "As-Built"). The Engineer will analyse all such designs and drawings, will appraise them as to whether they are reasonable and consistent with the Construction Drawings, will approve if requested and will order changes when deemed necessary.

Within seven (7) days after submission of the drawings, the Engineer will advise the Contractor of his conclusions regarding the drawings.

The Contractor shall bring to the attention of the Engineer any variation to the Contract in the document submitted for approval. Review of the Contractor's drawings by the Engineer shall not relieve the Contractor of the responsibility for the correctness thereof, nor from the results arising from any error or omission of details of design. Review of Drawings and Specification shall, in every case, be subject to final approval of the equipment and materials after they have been put in commission, all guarantees have been fulfilled and the general operation of the equipment and materials has been found satisfactory to the Engineer.

7.4 AS BUILT DRAWINGS

After the work has been completed, the Contractor shall furnish to the Engineer 2 copies of drawings (hard copies) and CD-ROM prepared from conditions as surveyed during construction, showing the Works as constructed together with all other information that may either be required or be useful for the operation and maintenance of the Works in the future, such as alignment, depth and levels of utilities, dimensions and location of structures, size of pipelines and services encountered during excavation. These drawings shall be signed by the Contractor's site supervisor/s.

8. CONSTRUCTION SAFETY

The contractor is obliged to carry out the works in accordance with the relevant and applicable laws and regulations pertaining to health & safety in the construction sector. The Health & Safety officer of the contractor shall be responsible to implement construction safety.

9. PROJECT SIGNBOARD AND PLAQUE

The Contractor shall manufacture one sign/notice board and erect these where directed by the Engineer within the working limits. The sign/notice board shall be 1.20 x 1.50 m. The sign/notice board shall have the indication as instructed by the Engineer. The Contractor shall erect the sign/notice board on suitable supports in positions within the site as directed by the Engineer. The sign/notice board shall be left in position and maintained during the works and the Defects Liability Period.

10. TEMPORARY FACILITIES

Starting from the site possession date, the Contractor shall have to bear the cost of management of all temporary facilities and/or works.

10.1 CONTRACTOR SITE FACILITIES

The Contractor shall provide and maintain on the site an office and adequate number of facilities for resting and sanitary purposes of his personnel of the Contract working on or associated with this project.

Temporary site facilities must be kept clean and free from nuisance so as not to become a danger to the adjoining properties or to form grounds for complaints from property owners adjacent to the site. The Contractor shall provide proper and adequate lavatory accommodation for the workmen, satisfactory to the Engineer. Further, the Contractor shall furnish and maintain all apparatus and equipment, such as ladders, scaffolds, ramps, runways, temporary stairs, derricks, hoists, elevators, chutes, etc., as required for the proper execution and progress of the work. Such facilities shall be strong and substantial and safe for the purpose for which they are to be used, shall meet all applicable requirements and to the approval of the Engineer.

When the site facilities are no longer needed in construction they shall be promptly dismantled, unless otherwise specified or directed, and removed from the site.

10.2 Engineer Site/Field office (NOT APPLICABLE)

The engineer's office shall be a prefabricated, modular and a portable one that can be manufactured elsewhere and installed on the site. A variation of the layout can be accepted provided the overall surface area is not reduced.

The surface areas shall be at least follows;

10.00 m² for the office; 12.00 m² for the meeting room; 3.00 m² for the toilet; 3.00 m² for the kitchenette

The office will be equipped with a hot water heater of 2lt capacity and 2 inverter air-conditioning units of 9000BTU each.

Furnishing will compose of 1 meeting table of 3mx2m with 8 chairs, 2 office desks & chairs, 2 visitors chairs; lockable filing cupboard of 1x1 meter. A board of 2x1.5 is to be installed in the meeting room wall.

The office should be connected to water, wastewater and electricity.

Telephony and internet connectivity are to be provided with a regular smartphone with data connection of at least 2GB.

A new laptop computer (latest versions in the market) must be provided with the relevant softwares.

One combined printer/copier/scanner to be installed in the office.

Apple IPAD or equivalent to be provided for the use during the works.

One water dispenser and its 19lt water bottle, one kettle for heating water. Sufficient supplies of cups & glasses, coffee, tea, sugar etc.

Necessary stationery materials, such as papers, pencils, ink and rubbers, etc.

Measuring devices of various types and kinds.

Safety equipment such as hardhats (10no), shoes (10 pairs) and vests (15 no)

The Contractor shall be responsible for erecting, furnishing, making all utility connections and disconnections, winter heating, summer cooling, lighting, wall mounted socket outlets, maintaining and completely servicing the field office.

Maintenance and upkeep of the office includes cleaning, repairs, consumables, toiletries and electricity & internet telephony usage will be included.

After 60 days of the substantial completion being issued, the contractor will remove all from the site and take all the items.

Payments will be made prorated at each payment certificate.

11. TEMPORARY WATER, POWER AND LIGHT

The Contractor shall provide all temporary water, power and light service required for his work. The Contractor shall make all necessary applications, obtain required permits and pay all fees and charges for such service and its use.

The Contractor shall furnish all wiring, lamps, switches, fuses, receptacles, etc., as may be required for his work. Temporary power and light circuits shall be thoroughly insulated and waterproof. The temporary power and light system shall be subject to the inspection and approval of the electricity authority. The Contractor shall provide sufficient lighting to ensure that, at all times:

- Safe working conditions are provided for all personnel on the work sites;
- The Works can be constructed in complete compliance with the Contract;
- Complete inspections of all work in progress can be made by the Engineer, and
- Security of the works area and public safety measures are adequate and effective.

All moving plant used during night operations shall be equipped with sufficient lights and reflectors and fluorescent markings to ensure safe working conditions. The submission to or approval by the Engineer of the Contractor's proposals for lighting shall not relieve the Contractor of any of his liabilities or obligations under the Contract.

12. HEALTH & SAFETY

The Contractor shall prepare a HS Plan prepared by the designated licensed HS officer and elaborate on the health safety risk matrix submitted at the bidding stage. The HS Officer shall supervise all aspects of health & safety on site and shall report monthly on any activity pertaining to health & safety.

Report should be written in good English and should be proof-read before submission.

The HS Officer shall sign the report.

Printed and digital formats must be submitted. Upon approval of the report relevant payment shall be made.

13. WORK PROGRAMME AND ESTIMATED AMOUNT OF WORKS

With reference to Clause 13 of the General Conditions of Contract, the Contractor shall prepare a work programme. In this work programme the contractor shall also estimate monthly amounts that he plans to execute and submit as payments certificates.

14. CONTRACTOR'S SITE SUPERVISION

The Contractor shall have qualified site architect and/or site engineer full time on the site during the works until substantial completion. Directors, shareholders and general managers of the contractor shall not be accepted as site supervisors.

Additionally, a part time health & safety officer shall be provided during the works. Directors, shareholders and general managers of the contractor shall not be accepted as health & safety officer.

15. PRE-CONSTRUCTION RECORDS

The Contractor shall prepare a photo documented and sketched survey of the project and the project site for the records. This shall be submitted by the end of the mobilisation period.

The Contractor shall perform topographical survey of the site within the mobilisation period and record with details the existing layout, levels, site conditions. The survey shall include the condition of existing services and facilities, walls and circulations area, and also shall include photographs where appropriate and spot levels as necessary and written descriptions of the site conditions. The survey will be signed and submitted to the Engineer for the records.

16. MONTHLY PROGRESS REPORT

The Contractor shall prepare a progress report every month. The report should show all the activities carried out with sketches, drawings, pictures, etc.

Report should be written in good English and should be proof-read before submission. The Contractor shall sign the report. Printed and digital formats must be submitted.

The report shall also contain information related to the calculation of the carbon footprint. Details shall be given to the contractor.

17. CONSTRUCTION SCHEDULE

This construction schedule shall show clearly how the works shall be organized by section and the corresponding proposed progress on the main items, structures and sub-trades of the Contract. The Work program shall indicate the area of work, the plot number, the number of construction crews, plant and equipment to be employed, etc. The Engineer may require the Contractor to revise his proposed schedule at any time, as provided for in the General Conditions.

18. WORK TO CONFORM

All work shall conform during its progress and on its completion, truly to the lines, levels and grades shown on the Drawings and shall be built in a thoroughly substantial and workmanlike manner, in accordance with the Drawings and Specifications subject to such modifications and additions as may be deemed

necessary by the Engineer during its execution and in no case shall any work in excess of the requirements of the Drawings and Specifications be paid for unless ordered in writing by the Engineer.

19. LAYOUT OF WORK AND SURVEY

19.1 Reference points, lines and levels

The Contractor shall carry out surface surveys and shall establish marks on the surface and he will establish Bench Marks at appropriate locations on the site of the works. The Engineer shall check these surveys and marks. The Contractor shall be responsible for transferring the lines and levels from these points to all points of construction. The Contractor must set the line, levels and grade by means of surveyor's instruments or other approved means. Any work done without accurate line or levels having been established or without the supervision of an Inspector may not be estimated, measured or paid for and, if found to be inaccurate shall be corrected or removed and replaced at the Contractor's cost and expense.

19.2 Elevations

The setting out by the Contractor shall include, but shall not be limited to, the preparation of topographical maps including coordinates system and/or axis, the installation of centre line stakes, grade and offset stakes, sight rails and batter boards. The Contractor shall be responsible for the true and proper setting out of the works and for the correctness of the position, levels, dimensions and alignment of all parts of the works and for the provision of all necessary instruments and labour in connection therewith. The checking of the setting out of any lines or levels by the Engineer shall not in any way release the Contractor from his responsibility for the correctness therefore. The Contractor shall carefully protect and preserve all Bench Marks, stakes and other items used in setting out the works.

20. PROTECTION & REPAIR OF PROPERTY, STRUCTURES & UTILITIES

No responsibility shall be assumed by the Employer for the correctness or completeness of the Drawings with respect to existing utilities, pipes, catch basins, chambers or other objects either under-ground or on the surface and should plots of such be found incorrect or incomplete the Contractor shall have no claim on that account.

The Contractor shall, at his own cost and expense, and in a manner approved by the Engineer sustain in their places and protect from injury any conduits, cables, pipes, roadways, buildings and all other structures or property in the vicinity of his work, whether above ground or underground, or which appear within the excavations.

He shall, at all times, have sufficient quantities of timber and plank, chains, etc. on the site, and shall use the same as required for sheathing or sheet piling and bracing the sides, roofs and ends for excavations, and for sustaining or supporting any and all structures that are endangered.

When the construction is adjacent to or on residential property the excavation, disposal of the material, and backfill operations shall be performed in such a manner as to restore the properties to their original conditions as nearly as practicable as determined by the Engineer.

Any stones, trees, brush or other deleterious matter left by construction operations shall be removed by the Contractor by hauling to approve disposal areas or by means acceptable to the Engineer before final replacement of the soil. The Contractor shall carry on his operations in such sequence and in such manner

as to minimize disturbance to the public and to interfere as little as possible with the operations of property users.

21. WORKS PROTECTION

It shall be a requirement of this Contract that the Contractor erect adequate fencing/protection around all worksite to protect the public when the Contractor's forces are on the site and are actively engaged in constructing the works. The Contractor shall clean and keep clean the streets, the work and public property occupied by him from waste materials or refuse resulting from his operations. Trucks hauling excavated materials, cement, sand, stone or other loose materials from or to the site shall be tight so that no spillage will occur on adjacent streets.

The Contractor will remove from the site of the works any machine or tool unsuitable for the works specified, or of insufficient efficiency and will replace them by approved equipment without being entitled to any extra payment for transport, loss of working hours, or any other damage or loss caused by replacing the equipment.

22. PROTECTION, REPAIR AND MAINTENANCE OF CONSTRUCTION

All newly constructed work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and any portion injured shall be reconstructed by the Contractor at his own expense. During the restoration process all structures shall be protected in a manner approved by the Engineer. Should any of the floors or other parts of the structures become heave, cracked or otherwise damaged all such damaged portions of the work shall be completely repaired and made good by the Contractor at his own expense and to the satisfaction of the Engineer. If in the final inspection of the work, any defects, faults or omissions are found, the Contractor shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labour required. Further, the Contractor shall be fully responsible for satisfactory maintenance and repair of the construction and other work undertaken herein, for at least the guarantee period described in the General Conditions of this Contract.

23. SAFETY MEASURES

23.1 GENERAL

The Contractor shall prepare a Health and Safety Plan as required by the relevant regulations on health and safety. The Contractor shall be responsible for the safety of all workmen and other persons entering the Works and shall, at his own expense (where not otherwise stated) and to the approval of the Engineer, take all measures necessary to ensure their safety.

Provision of proper safety and emergency regulation includes fire, gas (if any) and electric shock prevention, stretchers and first aid boxes, together with rescue facilities generally, for each place of working.

- Safe shoring of all excavations
- Provision of efficient safety helmets for all personnel including the Employer and the Engineer and each of their staff and any authorized visitors to the Site
- Safe control of water including provision of ample standby pumping plant

- Provision and maintenance of suitable lighting to provide adequate illumination of the Works with appropriate spares and standby equipment
- Provision of good and safe access to any part of the Works

Notices written in suitable languages to be erected at points likely to be used by the public and warning the public of the existence of the Works. These notices shall be in addition to any statutory requirements demanded of the Contractor.

The Contractor shall ensure that all his employees are fully conversant with the regulations, emergency and rescue procedures, etc., and the Contractor shall enforce the rule that any employee committing a serious breach of such regulations shall be instantly dismissed and shall not be re-employed. Personal protective equipment shall be available and used by operatives when appropriate, including: safety helmet, eye protection, ear protection, hand protection, foot protection.

23.2 First Aid

The Contractor shall provide and maintain on the work a completely equipped first-aid kit, as required by Health & Safety requirements, in a clean orderly condition, which shall be readily accessible at all times to all his employees and the Engineer & his staff. The Contractor shall designate certain employees who are properly trained to be in charge of first aid. At least one such employee shall be available to render first-aid at all times that work is being carried on.

A telephone call list for summoning aid, such as doctors, ambulances, pull motor and rescue squads from outside sources shall be posted. The Contractor shall provide a stretcher and shall ensure that it is readily available at the site of the work. In locations of rural settings and far from any town and especially in the hot period (May – October) vials of serum against snake bite must be provided and maintained accordingly.

23.3 Transportation of materials and equipment

The Contractor shall take all reasonable precautions to ensure that public streets and thoroughfares used by him either for the Works or for the transport of plant, labour and materials are not made dirty and in the event of their becoming thus dirtied in the opinion of the Engineer the Contractor shall take all necessary and immediate steps to clean them. Each individual site must be kept clean during the work and must be thoroughly cleaned upon completion.

23.4 Sanitary requirements - Sanitation

The Contractor shall maintain the Site in a hygienic condition and shall comply with the requirements of the Engineer. At least all the wastewater produced on the Site, should be reasonably treated. The Contractor shall provide the necessary services to maintain the toilet facilities in a clean, sanitary condition and shall furnish all toilet room supplies required by the employees and the Engineer and his staff.

23.5 Prevention of noise and disturbance

The Contractor shall in general comply with the recommendations of the applicable regulations. The Contractor shall justify the details and arrangements of all plant before installation to ensure that suitable provisions are provided to reduce noise emission in built-up areas.

The Contractor shall take noise intensity readings as required by the Engineer and shall submit the results to the Engineer. The Contractor shall comply with measures required by the Engineer to keep noise and disturbance to the reasonable minimum. The hours of usage of any noisy machinery or plant for the above purpose shall be controlled by the Engineer or by his agent all in conformity with the relevant Statutory Regulations currently in force.

23.6 Fire prevention

The Contractor shall make arrangements and provide sufficient number of fire-fighting equipment to the satisfaction of the Engineer for the protection of the Works and any Temporary Works and any adjacent property from fire and shall give the Fire Authority all facilities periodically to inspect the fire prevention arrangements. The Contractor shall remove all rubbish and surplus material of a flammable nature and take such other steps as the Engineer may require but this shall not relieve the Contractor of any of his obligations under the Contract.

24. RECORD OF CONDITIONS DEMOLITION AND/OR CONSTRUCTION

24.1 DISASSEMBLY - MARKING

All parts or units disassembled, shall be marked, or tagged with piece marks. Marks shall be in accordance with approved demolition and/or erection drawings, clearly legible and so placed as to be readily visible when the part is being removed and/or erected in the field. The location of the match marks shall be clearly indicated on erection drawings. All parts or assembly of parts shall also be so marked as to identify them with this Contract. Photograph and documentation of all details of facades, architectural/historical elements should be done before, during and after the dismantling as instructed by the Engineer. If this task is not performed appropriately, the Engineer may delegate these duties to an external party, and then deduct the costs from amounts payable to the Contractor

24.2 PIECE OF ART

After recording and marking any valuable piece of art materials, after removal the corresponding material shall be kept at a secure place, on the condition and location to be agreed with the Engineer and the Employer. The materials shall be delivered to the Employer in exchange for an official receipt document. The Contractor will be responsible from the loss of any piece of art from the Site.

24.3 Special repairs works

In special case, the Engineer may request the Contractor to execute moulds and/or "copying works" at required locations related ornamental stones or wooden prior to the renewal of the element. The special corresponding arrangement shall be discussed and agreed between the parties prior to the execution of this works.

25. ELEMENTS FOR RE-USE

The dismantling and/or removal of the existing construction and/or structures elements shall be done with extreme care to avoid destruction/damage and in order to appreciate its exact condition. Existing element such as wood, timber, iron, I-beam, stone, adobe, tiles, marble and/or similar building element can be proposed for re-use if in good condition. If it is established by the Contractor and approved by the Engineer that the element has lost its technical, structural and load-bearing characteristics it shall be removed from the site and shall not be proposed re-use for any rehabilitation works. Any element acceptable for re-use

proposed and/or recommended by the Contractor and/or Engineer, shall be recorded, measured and properly stored in accordance with its nature and corresponding storage requirement. All elements for re-use shall be reconditioned, cleaned, protected, and painted as per specifications before installation. The works for checking, investigating, and storing buildings elements for re-use are included in the present scope of works. The Contractor will be responsible for damages that may occur to any existing building element during dismantling and/or removal; any damages to building elements will be repaired and/or the element replaced at the Contractor's expenses.

26. RESPONSIBILITY FOR MATERIAL

The contractor has to present the list of materials, which will be used during the construction, while submitting a proposal. All information; test result, documents, etc... related to materials will be submitted with the proposal. The Contractor shall be responsible for all material furnished by him and shall replace at his own expense all such material found defective in manufacture or damaged in handling after delivery by the manufacturer. This shall include the furnishing of all material and labour required for the replacement of installed material discovered defective prior to the end of the guarantee period. If not otherwise specified in the drawings or in the Bill of Quantities, all materials supplied shall comply with approved EN and EU Standards, such as the CE. The Contractor shall be responsible for the safe loading and unloading of all materials furnished by the Employer or the Contractor and/or delivered to the site by him, under the Contract. The Contractor shall be responsible for the safe storage of materials or equipment furnished by him and intended for the work until it has been incorporated in the completed project. The execution of special paint will be done by the Contractor following the instructions of the manufacturers.

27. MATERIALS AND WORKMANSHIP

All materials furnished under this Contract shall be new, of best quality, first-class in every respect and purchased from a known and approved manufacturer/supplier. The material shall be installed, constructed and finished in a workmanlike manner. Materials shall be suitable for the service intended and selected and fabricated in accordance with the best Engineering practice. Unless otherwise specified herein, all materials shall conform to the appropriate standard specification requirements.

28. INSPECTION & REJECTION OF MATERIALS & EQUIPMENT SUPPLIED BY THE CONTRACTOR

The Contractor shall submit to the Engineer full information as to all materials, equipment and arrangements which the Contractor proposes to furnish or make. A copy of this information shall be submitted in a form approved by the Engineer and shall be complete to the extent that the Engineer may determine if the proposed materials, equipment and arrangements will meet the Contract requirements. In addition, the materials supplied by the Contractor for the performance of the work will be inspected by the Engineer at the time of delivery to the Contractor, and at such other time before use as the Engineer may elect, and materials rejected after delivery to the Contractor shall be returned to the point of delivery by and at the expense of the Contractor. All works done by the Contractor shall also be subject to the inspection of the Engineer, and defective work repaired or replaced as directed. Facilities for the handling and inspection of materials and work supplied by the Contractor shall, at all times, be furnished by and at the expense of the Contractor, who shall provide suitable and adequate storage room for materials during the progress of the work and be responsible for any loss of or damage to materials stored therein.

29. SUBMISSION OF SAMPLES AND DATA

In addition to any specific provision in the Contract for the sampling and testing of materials, the Contractor shall submit to the Engineer, as he may require, samples, drawings, catalogues, cuts, diagrams and other descriptive data for all mechanical, electrical, architectural and such other materials and equipment as may be designated by the Engineer and which the Contractor proposed to incorporate in the Works. Such samples, if approved, will be retained by the Engineer.

No materials or goods, of which samples have been submitted, shall be used in the Works, unless and until such samples have been approved in writing by the Engineer. The Engineer may reject any materials and goods which in his opinion, are inferior to the samples thereof previously approved and the Contractor shall promptly remove such materials and goods from the Site, at his own expense.

25 TESTS**25.1 General**

The Contractor shall afford the Engineer all facilities, assistance, labour and appliances necessary for the convenient supervision of testing, weighing, or analysis of all materials or goods. The Contractor shall provide and execute the tests of any materials or goods or as the Engineer may require, and shall arrange for tests to be undertaken at an approved independent laboratory/ies. Should the Engineer not inspect any materials or goods at the place of manufacture, the Contractor shall obtain Certificates of Test from the suppliers of such materials and shall submit to the Engineer. Such certificates shall certify that the materials or goods concerned have been tested in accordance with the requirements of the Contract and shall give the results of all tests carried out. The Contractor shall provide adequate means of identifying the materials and goods delivered to the Site with the corresponding certificates.

25.2 Manufacturer's Certificate Of Compliance – Mill Certificates

In the case of standard labelled stock products of standard manufacture which have a record of satisfactory performance in similar work over a period of not less than 2 years, the Engineer may accept a statement from the Manufacturer attested by a certificate that the product conforms to the applicable Specifications.

25.3 Cost of Tests

The costs of all tests made by the Contractor and/or at the Engineer's instructions on all materials as requested in the Contract and the cost of tests on finished works as specified in the contract shall be borne by the Contractor.

25.4 Acceptance of Materials

The approval by the Engineer of any material shall in no way relieve the Contractor of any of his responsibilities for meeting all of the requirements of the Specifications and shall not prevent subsequent rejection if such material or equipment is later found to be defective or not conforming to the Specifications.

26. "OR EQUAL" CLAUSE

Whenever a material or article required is specified or shown on the drawings by using the name of the propriety product or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory provided the material or article so proposed is of equal substance.

27 PROTECTION OF FINISHES

The Contractor shall take every care to prevent damage to the works and shall ensure that adequate protection are given to all works from the activities of following trades and any third party. Vulnerable parts of the works particularly liable to damage shall be protected as may be reasonably required by the Engineer and shall be deemed to be insured against damages in accordance with the conditions of contract.

GENERAL SPECIFICATIONS

1. GENERAL

All the works will be realized by using first class materials and labour and according to application project. The Contractor will give a proposal after having seen the construction site, completed a survey of the project and specifications, and explored the area of the Work. Prior to installation, the Contractor will provide brochures and samples of materials for the Engineer's approval and shall carry out any test required by the Engineer for the approval of those materials.

2. SETTING OUT - EXCAVATION WORKS

2.1. General

Road, pavement and substructure will be realized according to the project design, and the Contractor is responsible of the setting out and level of the works. Any problem occurring as a result of incorrect setting-out will be corrected by the Contractor. The level of some reference point and/or benchmarks will be given to the Contractor and the Contractor shall proceed with all levelling required for the setting out of the works in accordance to the levels in the project.

Levelling, excavation, backfill and the other operations will be done according to the specifications and the requirements given in the project. The Contractor is responsible for having investigated the geotechnical soil condition and any soil conditions which may affect the progress of the work. Any claim based on unforeseen soil conditions shall not be accepted. If it is necessary, excavation works will be done by hand or compressor. In the case of extra excavation done by the Contractor, no extra payment will be made to the Contractor.

2.2. Workmanship

Disposal of water

The works shall be maintained free of water.

Topsoil strip

Before starting any excavation, the Contractor shall take off all topsoil from the area of the Works. The topsoil shall be kept separate from other soils and as directed, shall be either stockpiled or spread in a designated location or disposed of by the Contractor.

Limits of excavation

- General

The backfilling to working spaces generally is to be filled with Type 2 granular material.

- Excess excavation

Should the Contractor excavate beyond the net width as shown on the drawings, or should any slips occur then the Engineer will require the whole of the void, including that for which granular filling has been measured, to be backfilled with mass concrete grade C10P as described in BS 5328.

Any excavation below the required formation levels as shown on the drawings, except where specifically instructed in order to reach a firm bearing strata, shall also be brought up to the correct level with mass concrete grade C10P.

- Formation

All formations shall be trimmed, leveled, cleared of loose material and compacted ready for inspection. In the case of trench fill foundations greater than 1.2 m deep, formations shall be prepared from the ground surface.

- Presence of Water

If subsoil water comes out during the excavation, the Contractor will afford the installation and operation of motor pump in order to divert the water. The soil excavated will be removed and disposed to the place to be indicated by the Engineer.

2.3. Measurement and rates

Measurement for all excavation and filling shall be net and no allowance has been made for bulking. Excavation has been measured the net size on plan of the foundation or base of the structure concerned (i.e. without any provision for working space) multiplied by the mean depth.

Rates for excavation and earthworks in the Bills of Quantities shall include for:

- Excavating in any type of ground, including all types of rock, foundations, concrete structures, absorption pits, roots and other obstructions.
- Excavating below the water table.
- Leveling, grading and trimming and compacting bottoms of excavations and top of fill.
- Properly supporting the sides of excavations.
- Keeping excavations free from any water, rubbish etc.
- All necessary double or multiple handling of excavated materials.
- Working space if required by the Contractor.
- Hand and/or mechanical excavation disposal and fillings.
- Disposal of trees, hedges and other vegetation cut down and grubbed up.
- Pumping of any water, if necessary, until the date of completion of the works.

Rates for imported filling shall include for establishing borrow pits, transport to site from any distance etc.

Rates for disposal of surplus excavated materials shall include for providing a tip off site and paying of all charges in connection therewith.

3. CONCRETE BLOCK TILE, BORDER STONE AND PRECAST CONCRETE BENCH

3.1. General

Concrete tile and curb stones (Border stones) will be manufactured in different colour. The manufacture dates of tiles and curb stones will be written on them in such a way that the text will not be lost. The tiles and the curb stones will be transferred to the site after they are watered in the manufacturer place 2-3 times in a day at least during 5 days.

The manufacture dates of the tiles and blocks in each track/palette will be the same. The Engineer may select at least 1 to 3 sample maximum from each track in order to make a pressure test. These samples will be delivered to an agreed laboratory by the Engineer for the execution of pressure tests, and the related cost of the test will be borne by the Contractor.

Any tiles and/or precast block will not be used until the test results are received. The tiles or blocks which are not suitable to be used according to the test results will be taken away from the site.

The characteristics of tiles are as follows:

- Pressure resistance : 500kN/cm²
- Abrasion Resistance : 15cm³ in each 50cm² (max)
- Frost Resistance : %3 (max)
- Form Tolerance : ±2mm (max)
- Size Tolerance : ±3mm (max)
- Water Absorption : %5 (max)

The dimensions of the precast concrete tiles will be 10x10cm, 20x20cm, 30x20cm, 40x20cm, 40x40cm, 10x20cm, Ø40cm, Ø30cm Ø20cm and Ø10cm and they will be used randomly as it is shown in the project drawings. The pavements will be covered with tiles of 8cm thick.

3.2 Border (Kerb/Curb) Stones;

The Precast border stones will be manufactured in 10x30x40cm and 10x25x40cm dimensions. The joints of the stones will not be wider than 2 cm and the joints will be filled with cement mortar in the colour of Border (curb) stones before pavement fill is applied. The Border (curb) stones will be laid above a 15x30cm C16 concrete foundation as shown in the details drawings. The curb stones will have the same colour as tiles, will be manufactured with C20 concrete with an impermeable texture and will be mounted uniformly. The border for road shall have a flat chamfer on one as per standard. Special border/kerbs shall be installed for entrance/access; the details shall be submitted by the Contractor to the Engineer for approval.

3.3 Precast Concrete Bench;

The precast concrete benches 10x12.5x5 cm will be paved twice to the fronts of Border (curb) stones next to asphalt or precast concrete tiles. The precast concrete benches will have the quality and strength of concrete grade C20. The joints of curb stones will not be wider than 10 mm and the joints will be filled with cement mortar in the colour as bench.

The precast concrete bench will be laid over a C16 concrete foundation shown in the details drawings. In order to install the kerb and/or the bench, the asphalt of the road will be properly cut before the excavation in order to prevent any damage to the road.

3.4 Precast Concrete Tiles:

The Contractor shall install the precast concrete tile on the following layers in order to reach the paved floor finish level:

- Excavation/backfill at the project level,
- Sub-based granular material 15cm,
- Compacted sand 5cm,
- Precast Concrete tile 8cm.

The necessary depth of excavation will be carried out by the Contractor. After receiving the approval of the Engineer on the excavation, in the location defined on the drawings, the sub-base of 15 cm will be installed and compacted in layer to the correct level in order to receive the sand layer. All excavated material shall be removed from the site by the Contractor.

After the approval of the project level by the Engineer that the sub-base material is properly compacted and its thickness and level are correct, the sand layer with a thickness of 5cm will be laid and compacted

over the stabilized sub-base material. After the completion of these works concrete block tile paving work will start.

The concrete block tiles will be installed properly onto sand according to slopes given in the project with 0.5cm joint gaps left between the tiles in order to allow placing sand in the joint. The tiles will be placed in such a way, position and shape as indicated on the project drawings.

Concrete blocks tiles will be cut properly with a machine when necessary and will be laid in order to provide the paving pattern. After cutting blocks, any blocks smaller than one third of its size, shall not be installed.

Ramps for handicapped will be executed at the start and end points of the pavement, or at the parts shown on the drawings and/or at location to be agreed by the Engineer.

Where approved by the Engineer, colour cement may be cast at some parts instead of using small pieces of tiles. When coloured cement is used, it should have the same colour as the blocks. However, this application should not take place without the approval of the Engineer.

After paving precast with concrete blocks as described above, sand will be poured over the blocks and the sand will be brushed to let the joints to be filled with sand. After the brushing operation is complete, the blocks will be squeezed with a tool (vibrator, etc.). The compress work will start when 40m² paving is complete. However, the edges of the paved area should be protected.

The tile compaction with vibrator should stop 1 meter of the open end where the concrete block laying is to be continued. In relation with the progress of the laying work, the Contractor shall provide an adequate numbers of vibrators, so that uniform and in-time compaction can be carried out.

The performance of the vibrators should be the following values:

- Plate area : 0.2-.04 m²
- Applied pressure : 50-75 KN/m³
- Frequency : 60-1900 Hz

The contact surface of the vibrator should be provided to be soft enough in order to prevent any damage to block surfaces. There will not be any un-compacted floor left at the end of the working day except at the edge of the flooring where installation has to be continued. After all concrete block flooring is completed; they will be brushes with sand as it has been done previously.

4. BACKFILL MATERIAL

4.1. Sand Beds:

The clay ratio within the sand which will be used to tile concrete tiles will not be more than 3 per cent. Sand screening will take place after the moisture ratio is approved by the Engineer. The optimum compaction of the sand layer will be carried out firstly with a vibrator and then with a hand roller without exceeding the final thickness of 5cm of compacted sand. The grade of the sand to be used will be within the following limits:

<u>Sieve</u>	<u>Percent Passing (Weight)</u>
5.00mm -----	90-100
2.36mm-----	75-100

1.18mm-----	55-90
0.60mm-----	35-59
0.30mm-----	8-30
0.15mm-----	0-10

4.2. Subbase Granular Materials:

Subbase materials will consist of naturally occurring, coarse-grained soils or blended and processed soils. Lime rock, coral, shell, ashes, cinders, caliche, and disintegrated granite may be used as sub bases. Subbase will be formed using material stabilized with commercial admixtures.

When the entire subbase material is secured in a uniform and satisfactory condition and contains approximately the required moisture, such approved material moved directly to the spreading equipment for placing. The material will be obtained from gravel pits, stockpiles, or will be produced from a crushing and screening plant with the proper blending. The materials from these sources should meet the requirements for grading, quality, and consistency. The moisture content of the material approximately that required to obtain maximum density. Any minor deficiency or excess of moisture may be corrected by surface sprinkling or by aeration. In such instances, some mixing or manipulation may be required, immediately preceding the rolling, to obtain the required moisture content.

The sub-base course will be constructed in layers. Any layer will not be less than 75 mm nor more than 200 mm of compacted thickness. The material, as spread, is of uniform gradation with no pockets of fine or coarse materials. No material will be placed in or on a soft, muddy, or frozen course.

During the placing and spreading, sufficient caution will be exercised to prevent the incorporation of sub-grade, shoulder, or foreign material in the sub-base course mixture. The moisture content of the material at the start of compaction will not be below nor more than 1-1/2 percentage points above the optimum moisture content.

After the course is completed compacted, the surface will be tested for smoothness and accuracy of grade; any portion found to lack the required smoothness or to fail in accuracy of grade will be scarified, reshaped, re-compacted, until the required smoothness and accuracy is obtain.

6 EXECUTION OF CONCRETE [brushed if required] :

The order of the layers will be as shown below in order to reach the paved floor level of the project:

- Excavation/back fill at project level,
- Sub-based granular material 15cm properly graded and compacted,
- vapour barrier 1mm plastic liner installed over the sub-base before the concrete is poured
- C20 reinforced Concrete 15 cm (brushed if required).

The execution of concrete of 15cm depth will be combed at the points shown in the project. In order to prevent the formation of cracks on the concrete, concrete layer larger than 3mx3m will be cut at certain intervals with a joint of 2mm. The cut parts will be filled with cement mortar. Weld mesh will be placed into the concrete layer if required for important surface of concrete greater than 3mx3m.

7 METAL WORKS

7.1 General

The design, fabrication and erection of all steel structures will be carried out in accordance with the provisions of EC3 and EC8 which will be deemed to form part of the present specifications. The Contractor is obliged to employ expert staff who possess the required skills and training for structural steel works and who will be in a position to implement the requirements of these specifications.

The contractor will be responsible to prepare his own manufacturing drawings and cutting list in timely manner to be submitted and approved by the engineer. The following work is included in the structural steel works: the supply, transportation to site, assembly, erection, adjustment and stabilisation in the correct position and the painting of all metal structures, and roof and column coverings, all as shown on the drawings and described in the specifications.

Four weeks prior to the commencement of any work related to structural steel works, the Contractor will submit to the Engineer the name and details of the independent quality control laboratory with expertise in Non-Destructive Testing – NDT, that is proposed to undertake the qualitative testing of the structural steel works. This laboratory is required to have experience in structural steel works of similar scale in Cyprus and have, during the past years, conducted similar qualitative tests. The materials to be supplied by the Contractor will be identical, equivalent or of higher quality with regards to structure, performance, execution and strength, in relation to the materials described in the drawings and the specifications.

In the event the Contractor intends to use alternative materials with respect to the ones specified, then the Contractor must submit to the Engineer for approval the description of the manufacturing details, the manufacturer's name and details, and full technical description of the alternative materials for which approval is sought. In the event that, during the defects liability period provided for in the contract, the alternative materials proposed by the Contractor fail for any reason to fulfil the requirements of the specifications, then the Contractor will, at his own expense, replace the said materials with the materials described in the drawings and specifications.

7.2 Submission of samples

The Contractor is required to submit to the Engineer for approval, samples of all the materials that will be used, at least two months prior to the commencement of the work related to structural steel works. These samples will be used as prototypes for the materials that will be installed in the works. In the event that any materials prove to be of inferior quality with respect to the approved prototype samples, then such materials will be immediately replaced.

7.3 In Situ Measurements of dimensions

The Contractor will, before the construction of any part of the work, satisfy himself that all the members fit and connect accurately and correctly in the structure's available space. In the event that the Contractor locates deviations, he will timely inform the Engineer in order to take the required actions. The Contractor will furnish the Engineer with the fabrication methodology.

7.4 Material

Steel sections

The steel plates, sections, bars and hollow sections of the structural steelwork will be in accordance with BS 4360, BSEN 10025, BSEN 10013, EN 10210 and will be category S 325 JR and S355JR, Bolts Grade 10.9 and 8.8.

Manufacturer's Certificates – Samples and Tests - The Contractor, at his own expense, will submit manufacturer's certificates to confirm that the steel chemical composition and mechanical properties are in accordance with the relevant European standards. The Engineer reserves the right to inspect the fabrication of the steel members at the workshop, to take samples for testing, BS4360, paragraph 24.1, and to be present at the testing process for the mechanical properties determination.

Dimensions and Fabrication Tolerances of Steel Sections - The hollow and angle sections will be in accordance to the dimensions and fabrication tolerances of BS 4848: Part 2 and 4, respectively.

Surface Defects - Repairs of surface defects on steel sections will not be allowed in the cases covered under BS 4360, paragraph 10.3, unless the Engineer issues special approval.

Fabrication Tolerances of Steel Plates - The fabrication tolerances of the steel plates dimensions will be in accordance to BS 4360, chapter 2. For the plate thickness, the only tolerance acceptable will be in excess to the dimensions shown on the drawings.

Welding Steel - To avoid weld cracking, the carbon equivalent quantity of the members to be welded will not exceed the quantity specified for their steel grade, as shown in BS 4360, table 3, unless the contractor suggests an appropriate welding procedure that may not require meeting the above mentioned requirements. The connecting plates at the visible nodes will be laser cut, and the edges will be rounded. A sample will be presented to the Engineer for approval.

8 LANDSCAPE WORKS:

8.1 Ground Preparation

The preferred time for ground preparation is late summer/early (August-October) autumn before the planting season. If ground preparation must take place during the planting season, great care should be taken to prevent excess disturbance or compaction to the topsoil. Heavy soil should be allowed to settle before planting. Operations involved in preparation depend on the nature and scale of the scheme and the condition of the ground.

Clear unwanted vegetation, break up soil compacted during construction etc. shall be removed until the required project level. Stones and rubbish shall be removed and at least 20cm of vegetal topsoil shall be spread if required. The soil shall be treated to eradicate perennial weeds.

8.2 Imported Topsoil (Agriculture soil)

Imported topsoil which is 20 cm should be suitable for specific location and purpose but free from weeds and other extraneous matter as far as possible, with pH value and soil type as required for the planting purpose and approved by the supervising officer.

8.3 Preparation of Tree Pits

For each tree to be planted an area free of weeds and rubbish should be selected prior to excavation of the tree pit. A separate hole should be excavated for each tree. The pit should be at least 75 mm deeper than the root system and wide enough to allow adequate clearance between the root ends or sides of root ball and the side of the pit.

Dimensions for the tree pits for different types of stock are shown in the detail sheets. Pits for advanced stock and semi-mature trees should be at least 250 mm deeper and 500 mm (advanced stock) or 600 mm (semi-mature) wider than rootstock.

Topsoil excavated from the pit should be set aside for re-use. Excavated subsoil should be removed and not mixed with the topsoil. The bottom of the pit should be broken up to a depth of 150 mm, to assist drainage and firm root development. If the sides of the pit are glazed, these should also be broken up or roughened.