



**STATE BANK OF PAKISTAN  
SBP BANKING SERVICES CORPORATION (BANK)**

**TENDER DOCUMENTS**

**VOLUME – II (B)**

**SPECIFICATIONS – SPECIAL PROVISIONS**

**FOR**

**CONSTRUCTION OF SBP NEW OFFICE BUILDING**

**AT**

**GUJRANWALA**

**STATE BANK OF PAKISTAN, SBP BSC (BANK)**  
**CONSTRUCTION OF SBP NEW OFFICE BUILDING AT GUJRANWALA**

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## SPECIFICATIONS – SPECIAL PROVISIONS

### 1. GENERAL

- 1.1 Specifications – Special Provisions shall form an integral part of Bid & Contract documents.
- 1.2 The Contractor shall notify all sub-contractors of the provisions of these Special Provisions

### 2. DESCRIPTION OF PROJECT, WORKS INVOLVED AND SITE

State Bank of Pakistan intends to construct its new Office Building at Gujranwala.

The scope of works mainly comprises civil, electrical, plumbing, HVAC and lift works of the Building and related ancillary works lying within the boundaries and limits as shown on the drawings and any such additional areas adjacent thereto as may be designated by the Engineer from time to time for the construction to be performed under the Contract, and all such areas and additional areas shall comprise the Site.

The Employer will give to the Contractor possession of the area designated and defined as the Site and shown on the drawing as may be required to implement as much of the Works, when the Engineer's Notice to Commence the Works is given.

### 3. CODES, STANDARDS AND CERTIFICATES

#### A. Applicable Standards

Except as otherwise provided by these Specifications or the Drawings, all materials, equipment and fabrication and testing thereof shall conform to the latest applicable standards and codes referred in the Specifications by use of the abbreviations explained below:

ASCE	American Society of Civil Engineers
ASA	American Standard Association
ACI	- American Concrete Institute (USA)
AISI	- American Iron and Steel Institute (USA)
AISC	- American Institute of Steel Construction (USA)
ANSI	- American National Standard Institute (USA)
ASTM	- American Society for Testing and Materials (USA)
AASHTO	- American Association of State Highway & Transportation Officials.
AWS	- American Welding Society (USA)
BS	- British Standards (UK)
CP	- Codes of Practice (UK)
ICAO	International Civil Aviation Organization
BSICP	British Standard Institute Code of Practice
PS	- Pakistan Standards (Pak)
PCA	Portland Cement Association
PSI	Pakistan Standard Institute
SSPC	- Steel Structures Painting Council (USA)
UBC	- Uniform Building Code (USA)
USBR	- United States Bureau of Reclamation (USA)

If the Contractor, at any time and for any reason, wishes to deviate from the above standards or desires to use material or equipment not covered by the above standards, he shall state the exact nature of the changes, the reason for making the change and shall submit complete specifications of the materials and equipment to the Engineer for approval.

#### B. Standards other than those Specified

Where requirements for materials or equipment are specified by reference to a standard which has its origin in one country, it is not the intention to restrict the



requirements solely to that standard and that country. Other standards, including standards of other countries, will be accepted provided the requirements thereof, in the sole opinion of the Engineer, are at least equal to the requirements of the standard specified. The Contractor may propose to the Engineer an equivalent standard other than that specified, in which case he shall submit the proposed standard and all other information required and shall submit written proof that his proposed standard is equivalent in all significant respects to the standard specified. All submissions must be made in the English language.

**C. Codes and Standards at Site**

The Contractor shall supply and have at his site office:-

- a) Copies of all latest editions of codes and standards referred to in these Specifications or equivalent codes and standards as approved by the Engineer.
- b) Catalogues and published recommendations from manufacturers supplying products and materials for the project.
- c) The Contractor shall provide manufacturer's or supplier's materials which must meet the requirements of a specific code or standard as stated in these Specifications.

**4. MANUFACTURER'S RECOMMENDATIONS**

Installation of manufactured items shall be in accordance with procedures recommended by the manufacturer or as approved by the Engineer.

**5. UNITS OF MEASUREMENTS**

The FPS System of Units shall be used throughout the Project.

**6. EXISTING CONDITION AT SITE**

Drawings and information pertaining to existing project conditions are furnished for reference.

Neither the Employer nor the Engineer warrants the adequacy or correctness of these.

**7. PROTECTION AND PRECAUTIONS**

The Contractor and his sub-contractors shall afford all necessary protection to existing structures and will be required to make good at his own expense any damage done to such structures through his own or his representatives or subcontractors' fault and negligence.

The Contractor and his sub-contractors shall afford all necessary protection to existing roads in the area. He will clear and make good at his own expense any damage to or debris on these roads through his own fault and negligence. He must at all time ensure the free and normal flow of traffic and shall not cause obstruction to the traffic system. The Contractor and his sub-contractors shall provide and maintain necessary protection and precautionary measures such as warning signs, warning lamps and barricades etc. to prevent accidents.

The Contractor shall promptly correct all such damage to original condition at no additional expense to the Employer.

The Contractor shall cooperate with trades performing work under other Contracts as necessary for completion.



**8. SEQUENCE OF CONSTRUCTION**

The Contractor shall submit his proposal for approval of the Engineer the sequence of Construction, prior to starting the works. The works shall be executed as per approved sequence of construction

**9. LINES AND LEVELS**

Survey control points will be established by the Engineer. The Contractor shall be responsible for verifying these and shall be responsible for all requirements necessary for the execution of any work to the locations, lines, and levels specified or shown on the drawings, subject to such modifications as the Engineer may require as work progresses.

**10. PLANT, EQUIPMENT AND TOOLS**

The Contractor shall provide at his cost modern plant, equipment and tools, adequate and befitting to the nature, magnitude and size of this Contract, in strict compliance with the requirements of the General Conditions of Contract, Conditions of Particular Applications and Technical Specifications.

**11. PARTIAL POSSESSION**

Whenever, as determined by the Employer any portion of work performed by the Contractor is in a condition suitable for use, the Employer may take possession of or use such portion.

Such use by the Employer shall in no instance be construed as constituting final acceptance, and shall neither relieve the Contractor of any of his responsibilities under the Contract, nor acts a waiver by the Employer of any of the conditions thereof, provided that the Contractor shall not be liable for the cost of repairs, re-work, or renewals which may be required due to ordinary wear and tear resulting from such use. However, if such use increase the cost or delays to the completion of remaining portions of work, the Contractor will be entitled to an equitable adjustment.

If, as a result of the Contractor's failure to comply with the provision of the Contract, such use proves to be unsatisfactory, the Employer will have the right to continue such use until such portion of the work can, without injury to the Employer, be taken out of service for correction of defects, errors, omissions, or replacement of unsatisfactory materials or equipment, as necessary for such work to comply with the Contract; provided that the period of such operation or use pending completion of appropriate remedial action shall not exceed twelve months unless otherwise mutually agreed upon in writing between the parties.

**12. EXISTING SERVICES**

The Contractor shall search for, find, locate and protect any wiring, cable, duct, pipe work, etc., within or immediately adjoining the site area.

The Contractor shall take full responsibly for safety of existing service lines, utilities and utility structures uncovered or encountered during excavation and construction operations.

The Contractor shall take full responsibility for damaging any such service lines, utility/utility structure and any cost and/or expense that arises or issues from any such damage shall be borne directly by himself. Should any damage to any such service occur the Contractor shall forthwith take remedial action, initiate safety precautions, install temporary services and carryout repair all at his own cost and expense and inform the Engineer and notify all relevant authorities.

Existing utilities which are to remain in service for or after the works are to be determined by the Contractor. If any existing service lines, utilities and utility structures which are to remain in service are uncovered or encountered during these operations, they shall be safeguarded, protected from damage, and supported.



**13. CONSTRUCTION AREA AND ACCESS**

The Employer will provide the Contractor possible space within or nearby the area of site of works for the storage of plant, equipment and materials and for Contractor's temporary office, during the currency of the Contract. In case the adjacent area as required by the Contractor is not available within the Project boundary for storage of plant, equipment and machines then the Contractor shall arrange at his own expense possible space for storage of plant, equipment and machines at his own cost and expense. On no account shall such temporary installations conflict/interfere with any of the permanent installations, services and any operational function of Employer. The handling and storage of all plants, equipment and materials at site shall be the sole responsibility of the Contractor and at no risk and cost to the Employer.

The Contractor shall protect all material against corrosion, mechanical damage or deterioration during storage and erection on site. The protection methods shall be to the approval of the Engineer

**14. CONSTRUCTION & CHECKING AT SITE**

The Contractor shall submit to the Engineer in due time for approval and discussion, his proposals and plans as to the method and procedure to be adopted for the temporary and permanent works involved.

The submitting to these suggestions and arrangements, and the approval thereof by the Engineer shall not relieve the Contractor of his responsibilities and duties under the Contract.

The carrying out of all work included in the Contract is to be supervised by a sufficient number of qualified representatives of the Contractor and full facilities and assistance are to be afforded by the Contractor for the Engineer or his Representative to check & examine the execution of the work.

The Engineer reserves the right to inspect all parts of the works but may at his discretion waive inspection on certain items. This shall in no way absolve the Contractor from his responsibilities. This particularly applies to the checking of materials, the accurate setting out of foundations, and to the leveling, setting and aligning of the various parts, and to the proper fitting and adjustment of manufactured and finished materials and fixtures in position.

If the Engineer or his Representative find that the work progress is slow in such a way that the works or parts thereof will not be completed in the time specified, then he shall order the Contractor to work overtime or in shifts and the Contractor shall comply. These arrangements will be free of all financial encumbrances and at no additional costs to the Employer.

In the event of night work, the Contractor shall provide sufficient and adequate lighting to the satisfaction of the Engineer or his Representative and shall supply the necessary manpower for satisfactory continuation of the work after normal hours.

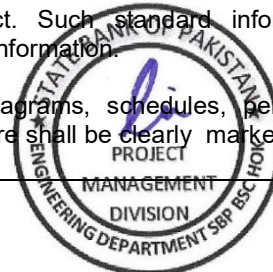
**15. STORAGE & HANDLING FACILITIES**

The Contractor shall make his own arrangements for providing the necessary space for the storage of plant, equipment and materials and for Contractor's temporary office, in and around the site of works, during the currency of the Contract.

**16. PRODUCT DATA**

Manufacturer's standard schematic drawings shall be modified or deleted to indicate only information which is applicable to the project. Such standard information shall be supplemented to provide all additional applicable information.

Manufacturer's catalogue, sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive literature shall be clearly marked to identify



pertinent materials products or models. Dimensions and required clearances shall be indicated. Shop performance characteristics and capacities shall be noted.

## 17. PRODUCT QUALITY AND HANDLING

Suppliers of local and foreign products and installations specified shall have been regularly engaged in the business of manufacturing, fabricating, installing and/ or servicing work required for a period not less than 5 years. In addition, the Engineer may request as appropriate a:

- list of similar installations that describes project, scope and date of completion.
- complete literature, performance data, and technical data.
- list of services record within Pakistan.
- location of service office from which this installation could be maintained.

For the actual fabrication, installation and testing of the specified work use only thoroughly trained and experienced workmen completely familiar with the items required and with the manufacturers recommended methods of installation. In acceptance or rejection, no allowance will be made for the lack of skill on the part of workmen.

Use all means necessary to protect materials before, during and after installation and to protect the installed work and materials of all other trades. In the event of damage, immediately make all repairs and replacement necessary for approval and at no additional cost to the Employer.

## 18. INSPECTION & TESTS REPORTS

All equipment and materials furnished under these specifications and all work performed in connection therewith will be subject to rigid inspection by the Engineer or the Engineer's Representative. Acceptance of equipment and material or the waiving off inspection thereof shall in no way relieve the Contractor of his responsibility for meeting the requirements of the Contract.

The Contractor shall furnish the Engineer with certified true copies of test reports of all materials used in the manufacture and fabrication of all equipment and material including metal work, steel pipes, fire bricks etc. The result of these test shall be in such form as to show compliance with the applicable Specifications, standards and codes for the material used.

## 19. FIELD LABORATORY AND TESTING

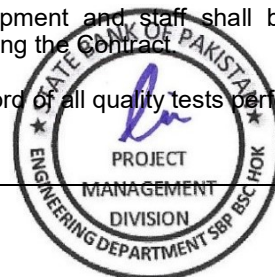
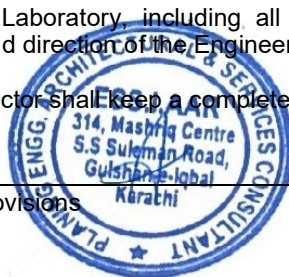
### 19.1 General

The Contractor shall provide and maintain a field laboratory equipped with approved equipment to perform all the tests required by the Engineer. The quality control testing shall be performed by the Contractor's competent personnel in accordance with a site testing and quality control programme to be established by the Contractor and approved by the Engineer. The Engineer may however, require certain tests to be performed in any other laboratory designated by him.

The Contractor shall provide laboratory helpers to the Engineer for testing. The laboratory shall be run by a qualified material Engineer and Laboratory Technician to be employed by the Contractor.

The Field Laboratory, including all equipment and staff shall be placed at the disposal and direction of the Engineer during the Contract.

The Contractor shall keep a complete record of all quality tests performed on site.



All quality control and tests shall be carried out in accordance with applicable standards and codes.

### 19.2. Field Laboratory Equipment Requirements

The Laboratory shall be equipped with new unused and latest Equipment to perform tests as per Technical Specifications and General Conditions of Contract. Additional equipment/materials shall be supplied by the Contractor as and when required by the Engineer to perform any specified test, at no additional cost to the Employer.

The laboratory shall also be equipped with new unused furniture, fittings and fixtures. If any equipment, furniture, fitting or fixture becomes unserviceable for any reason what so ever, the Contractor shall promptly replace the same as and when directed by the Engineer.

Generally following equipments shall be required:

- Schmidt Hammer
- Vicat Apparatus
- Sieve machine
- Universal Compression Machine
- Thermometer
- Cylinder Moulds
- Soil Compactor
- Atterberg's Testing Equipment
- Sand Replacement Apparatus
- Flanks
- Capping set
- Concrete cube and cylinder moulds
- Length gauge for aggregates
- Digital Balance
- Flakiness and Elongation Apparatus
- Oven

### 19.3. Testing Laboratory Certificates

The Engineer may accept a certificate from a commercial testing laboratory, satisfactory to him, certifying that the product has been tested within a period acceptable to the Engineer and that it conforms to the requirements of these specifications.

### 19.4. Method of Payment

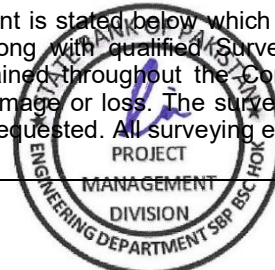
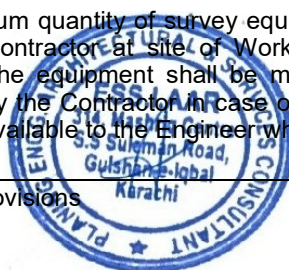
The cost of providing running and maintenance of the laboratory, equipment, materials and staff, testing charges for materials supplied by the Employer and all other tests to be performed in any other laboratory designated by the Engineer shall be deemed to be included in the price quoted by the Contractor and no separate claim for payment on this account shall be entertained by the Engineer. Furthermore, the cost of any additional laboratory, field and shop tests required through the resubmission of samples because of failure of compliance with Specifications shall be borne by the Contractor.

In case the Contractor does not provide the specified equipment and testing facility, cost of testing plus 100 percent overheads shall be recovered from his bills.

## 20. SURVEYING INSTRUMENTS

### 20.1 General

The minimum quantity of survey equipment is stated below which shall be available with the Contractor at site of Works along with qualified Surveyors and Survey Helpers. The equipment shall be maintained throughout the Contract Period and replaced by the Contractor in case of damage or loss. The survey equipment shall be made available to the Engineer when requested. All surveying equipment shall be





in good working condition.

## 20.2 Surveying Equipment Required

The Contractor shall provide and maintain the following surveying equipment at site.

- |    |   |         |
|----|---|---------|
| a) | Total Station   | 01 No.  |
| b) | Automatic Levels with tripods   | 02 Nos. |
| c) | Steel measuring tapes 50 m long   | 02 Nos. |
| c) | Staff   | 02 Nos. |
| d) | All other miscellaneous tools, equipment and materials required in surveying. |         |

## 21. APPROVAL OF MATERIALS AND PLANT

### 21.1 Quality of Materials

All materials, fixtures, fittings, supplies and plant furnished under the Contract shall be new and unused, standard first grade quality and of the best workmanship and design. No inferior or low-grade materials, supplies or articles will be either approved or accepted, and all work of assembly and construction shall be done in a first-class and workmanlike manner. In asking for prices for materials intended for delivery to the Site and incorporation in the Works under any portion of these Specifications, the Contractor shall provide the manufacturer or supplier with complete information as may be necessary to secure compliance to this Clause and, in every case, he shall quote this Clause in full to each such manufacturer or supplier.

### 21.2 Submission of Samples and Data

- 21.2.1 The Contractor shall furnish for approval of the Engineer with reasonable promptness all samples as directed by the Engineer or specifically called for in the Specifications and in accordance with the time schedule provided in the schedule of submittals. The Engineer shall check and approve such samples with reasonable promptness only for conformance with the design concept of the Works and for compliance with the information given in the Contract Documents. All work shall be in accordance with approved samples.
- 21.2.2 Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for consideration of the sample submitted.
- 21.2.3 Each sample shall be properly labeled with the name and quality of the material, manufacturer's name, name of the project, the Contractor's name and the date of submission, and the Specifications Article number to which the sample refers.
- 21.2.4 The manufacturer's installation directions shall be provided with each sample. The Contractor shall pay all transportation costs and deliver samples to the Engineer's office, Site or testing laboratory as directed by the Engineer.
- 21.2.5 Samples shall be of adequate size to permit proper evaluation of the material by the Engineer. Where variations in colour, texture, dimensions or other characteristics are to be expected, the Contractor shall submit samples showing the maximum range of variation. Materials exceeding the range of variation of the approved samples shall not be used on the Work.
- 21.2.6 In order to permit coordinated selection of colours and finishes, the Contractor shall deliver samples of all related items to the Engineer at one time. Samples of such materials will not be approved until all related samples have been submitted.



- 21.2.7 If both Shop Drawings and samples are required for the same item, the Engineer may require both to be submitted before approving either.
- 21.2.8 The Contractor shall erect Mock-up samples of finished items where specifically called for in the documents or as directed by the Engineer.
- The Mock-up samples shall be preserved/protected by the Contractor till the end of the project or as directed by the Engineer.
- 21.2.9 No acceptance or approval of any Shop Drawings or sample, or any indication or request by the Engineer on any Shop Drawings shall constitute an authorization for any increase in the Contract Sum.

### 21.3 Inspection

All material and Plant furnished and all work performed under this Contract will be subject to inspection by the Engineer at all times and in all states of completion both off-Site and on-Site. The Contractor shall furnish promptly without additional charge, all facilities, labour and materials reasonably needed for performing such inspection and testing as may be required by the Engineer.

### 21.4 Approved Sample at Site

The Contractor shall, at all times, keep on the Site approved samples. All such samples shall be made available to the Engineer as and when required.

## 22. BAR BENDING SCHEDULE

Bar bending (reinforcement bars) schedule of all structural drawings shall be prepared by the Contractor and submitted in triplicate to the Engineer for approval.

## 23. DRAWINGS

### 23.1 Bid Drawings

Bid Drawings issued with the Bid Documents, called the Bid Drawings, show scope of the work to be performed by the Contractor. The Drawings are generally in sufficient detail so as to be used as a basis for construction, fabrication and for placing orders for materials subject to corrections based on the future issue of supplementary Drawings as provided under Sub-Clause 12.2 hereof.

### 23.2 Construction Drawings, Supplementary Drawings

Upon commencement of the works and furnishing by the Contractor stake out survey plan & natural ground levels, the Engineer shall issue Construction Drawings to the Contractor. The Construction drawings may be issued in stages, where necessary.

The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall follow these drawings.

When additional information regarding the geological formations or other conditions becomes available, the Engineer may find it desirable to change dimensions or design of one or more of the features of the Works to conform to the newly disclosed conditions. The Engineer reserves the right to make such reasonable changes, and the Contractor's operations shall be conducted so as to accommodate any such reasonable changes in the Works.

### 23.3 Definition of Term Drawings

The term Drawings, as used in the Specifications means the Drawings referred in Clauses 12.1 and 12.2 above.



#### 23.4 Checking of Drawings

The Contractor shall check all Drawings carefully as soon as practicable after receipt thereof, and shall promptly notify the Engineer of any errors discovered.

#### 23.5 Copies of Drawings

Drawings will be issued to the Contractor as described below:

##### 23.5.1 Construction Drawings

Two (2) sets of the Construction Drawings will be issued to the Contractor as stated above, free of charge. Additional sets will be provided at cost of reproduction upon written request of the Contractor.

##### 23.5.2 Supplementary Drawings

Two (2) prints of each supplementary Drawing will be issued to the Contractor free of charge. Additional sets will be provided at cost of reproduction upon written request of the Contractor.

#### 23.6 Drawings to Be Furnished By the Contractor

The Contractor shall submit to the Engineer for review, such drawings as are required under the Contract, sufficiently in advance of the work intended to be executed.

##### 23.6.1 Reinforcement Drawings

Reinforcement placement drawings and bar bending schedules (to be provided by the Contractor as per clause 11 above) of all RCC work shall be prepared by the Contractor and submitted in triplicate to the Engineer for approval, sufficiently in advance of the works in which they are intended to be used.

##### 23.6.2 Shop Drawings

- (a) The Contractor shall submit to the Engineer for review three (3) copies of all drawings to be issued for setting out, fabrication, supply order and construction; based on data, requirements, dimensions, details, codes, standards and design provided in the drawings issued by the Engineer. Such drawings shall be submitted at least twenty-eight (28) days before they are required for use. If within a period of fourteen (14) days after submission, the Engineer notifies the Contractor that a drawing fails to comply with the relevant requirement of the Contract, it shall be rectified and resubmitted for approval at the Contractor's cost. Fabrication or construction shall not commence on any part of the Works until the shop drawings or construction drawings for that part of the Works have been approved by the Engineer.

The Works shall be executed in accordance with the drawings as approved by the Engineer. If the Contractor wishes to modify any approved drawings, he shall immediately notify the Engineer and submit revised drawings for approval. If the Engineer instructs that further drawings are necessary for executing the Works, the Contractor shall prepare such drawings and submit them for approval.

The Contractor at his cost shall rectify errors, omission, ambiguities, inadequacies and other defects.



Approval by the Engineer, in accordance with this paragraph, shall not relieve the Contractor of any of his responsibilities under the Contract.

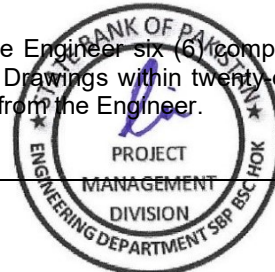
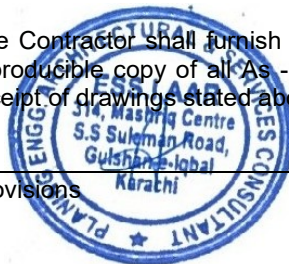
- (b) The shop drawings shall be properly identified indicating the part of the Works, the name of the contractor / supplier etc., the date of preparation and the dates of all revisions. The Shop Drawings shall be complete and shall show the design dimensions, proposed materials to be used, finishes, type of shop paint and all other details in connection thereto.
- (c) Where adjoining work requires shop drawings, the Contractor shall prepare and submit composite shop drawings, which shall show and define the work under all affected trades. If the Contractor executes work before coordinating with other trades so as to cause interference with work of those trades, he shall make changes necessary to correct the conditions without extra cost to the Employer.
- (d) No changes shall be made by the Contractor in the resubmitted shop drawings in excess of the corrections spelled out by the Engineer and in a separate note on the shop drawings.
- (e) No work in the shop shall be started and no material or plant ordered until the Engineer has approved the shop drawings. It shall be the responsibility of the Contractor to submit the shop drawings on a schedule that allows reasonable time for checking and approval and subsequent fabrication. Failure to submit shop drawings in ample time for checking, correcting, and rechecking will not justify extension of time for completion of the Works.
- (f) The Contractor shall also check and verify all site measurements whenever requested by other Specialist Contractors or by other Sub-Contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness, so as not to delay the work in any way. A copy of all such information passed on shall be given to the Engineer.

### 23.6.3 As-Built Drawings

The Contractor shall, at all times, keep on Site a separate set of prints of all drawings on which all significant changes between the work shown on the Drawings and that which is actually constructed, shall be noted neatly, accurately and promptly as the work progresses. The Subcontractor(s) for plumbing, mechanical and electrical shall, at all times, keep on Site, a separate set of prints of the drawings (showing their parts of the Works) on which all significant changes between the work shown on the Drawings and that which is actually constructed, shall be noted neatly, accurately and promptly as the work progresses. Such drawings shall show the exact physical location and configuration of the works as actually installed.

The Contractor shall, within fourteen (14) days of issuance of Taking-Over Certificate for whole of the Works, furnish to the Engineer for his approval two (2) copies of such marked up drawings. One (1) copy of each of the marked up drawings approved by the Engineer shall be returned to the Contractor by the Engineer and these shall be used for the preparation of the As - Built Drawings.

The Contractor shall furnish to the Engineer six (6) complete sets and one reproducible copy of all As -Built Drawings within twenty-eight (28) days of receipt of drawings stated above, from the Engineer.



**24. PROTECTION OF THE WORKS**

The Contractor shall whenever necessary cover up and protect the works from weather and damage by his own or other workmen performing subsequent operation. The Contractor shall provide all necessary dustsheets, barriers and guard rails and clear away the same at completion.

**25. RESTORATION AND CLEANING**

Upon completion of the works the Contractor shall restore all items covered by the Contract to the satisfaction of the Engineer.

The Contractor shall do regular cleaning and clear away all rubbish and excess materials that may accumulate from time to time on completion and before handing over. Upon completion of the works he shall obliterate all signs of temporary construction facilities such as work areas, structures, foundations of temporary structures, stock piles of excess or waste materials, or any other vestiges of construction, as directed by the Engineer. All buildings shall be cleaned; floors and paving scrubbed and the works and site shall be left in a clean and satisfactory state for immediate use and occupation. Care shall be taken not to use any cleaning materials, which may cause damage to the surface to be cleaned.

The Contractor shall also take all necessary precautions to keep the works and site free from vermin during construction and he shall leave the works vermin free on completion. Application of pest control agents shall not commence until the specific product, name, method and extent of application have been submitted to and approved of by the Engineer.

**26. SITE OFFICE AND TEMPORARY FACILITIES TO BE PROVIDED BY THE CONTRACTOR**

**26.1 Contractor's Office, Facilities Etc.**

The Contractor shall establish and maintain a Site office. The Contractor shall provide all facilities in connection with the execution, completion, of the Works, remedying defects therein and maintenance of the utilities services. The facilities shall not be limited to the Contractor's Site Office, labour camps, work yard and storage areas, temporary water supply, waste water disposal, temporary electricity, medical unit, temporary roads, fire protection and fire fighting equipment etc. The Contractor shall be solely responsible for arranging all utilities and the Contractor shall setup, maintain and operate an architectural and engineering facility at site with adequate number of technical and support staff as well as equipment required for particular nature of job covered under the Contract to prepare drawings/shop drawings for approval of the Engineer.

The Contractor shall arrange his labour camp, work yard, storage area and site office.

**26.2 Temporary Roads**

The Contractor shall prepare and maintain such temporary roads as may be necessary, from the site to the nearest road and also within the plot. Such roads shall be positioned strictly in accordance with the Engineer's instructions and the Contractor shall reduce or control any dust nuisance by regularly spraying water and compaction as directed.

**26.3 Temporary Services**

**26.3.1 Temporary Water Supply**

The Contractor shall supply in sufficient quantity all necessary potable and other water for construction purposes for all trades at points within a reasonable distance of any building being constructed. The Contractor shall make arrangements and pay charges for water service installation, maintenance and removal thereof, and pay the costs of water for all trades.



At completion of the work, the temporary water services equipment and piping shall be removed by the Contractor at his own expense.

### **26.3.2 Temporary Electricity**

The Contractor shall make all the necessary arrangements for a temporary electricity service, pay all expense in connection with the installation, operation and removal thereof and pay the costs of electricity consumed by all trades. The Contractor shall arrange and furnish an Electric Power Generating set at site and maintain the generating set in perfect working condition through-out the duration of Contract. The generating power of the set shall be sufficient to operate all plant and equipment as well as the camps and offices of the Contractor and the offices of the Engineer/Employer, during construction at site. Should the set fail to meet the required demand at site or fail to function or operate, the Contractor shall immediately replace the same with other generating set/sets to the satisfaction of the Employer as well as the Engineer.

A temporary lighting system shall be furnished, installed and maintained by the Contractor as required to satisfy the minimum requirements for safety and security and to the satisfaction of the Engineer.

When the permanent electrical power and lighting systems are in an operating condition, they may be used for temporary power and lighting for construction purposes provided that the Contractor obtains the written approval of the Engineer and the Employer and assumes full responsibility for the entire power and lighting system and pays all costs for operation and maintenance of the system.

At completion of construction work, or at such time as the Contractor makes use of permanent electrical equipment and devices, temporary electricity services shall be removed by the Contractor at his own expense.

### **26.3.3 Waste Disposal**

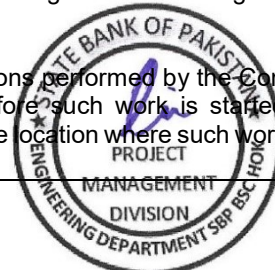
The Contractor shall make such temporary provisions as may be required in order to dispose of any chemicals, fuels, oils, grease, bituminous materials, waste and soil waste and the like without causing pollution to either the site or the environment. Disposal of any materials, wastes, effluent, garbage, oil, grease, chemicals and the like shall be in areas specified by the concerned local authority proposed by the Contractor and subject to the approval of the Engineer. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed of as directed by the Engineer and replaced with suitable fill material compacted and finished with topsoil all at the expense of the Contractor.

### **26.3.4 Fire Protection**

The Contractor shall provide and maintain adequate fire protection in the form of barrels of water with buckets, fire bucket tanks, fire extinguisher, or other effective means ready for instant use, distributed around the project and in and about temporary inflammable structures during construction of the works.

Gasoline and other flammable liquids shall be stored in and dispensed from safety containers approved by the Engineer and storage shall not be within building.

Torch-cutting and welding operations performed by the Contractor shall have the approval of the Engineer before such work is started and a chemical extinguisher is to be available at the location where such work is in progress.



The Contractor shall follow the instructions and specifications of the Civil Defense Department or any other local department concerned with such activities.

## 27 CONSTRUCTION SCHEDULE

A Construction schedule shall be maintained in accordance with the provisions of the General Conditions of Contract.

The schedule shall be accompanied with sufficient data and information including all necessary particulars of constructional plant, equipment machinery, temporary Works, arrival of plant, equipment at site and their installation, method of operation, work forces employed, etc., for activities of the Works.

Should the Engineer consider any alteration or addition in the programme and time schedule, the Contractor shall conform thereto without any cost to the Employer.

Whenever necessary and wherever the progress of the actual work shows departure, the programme and time schedule shall be undated and submitted to the Engineer for his approval.

## 28 SUBMISSION REQUIREMENTS

- 28.1 Schedule submission at least sixty days before the dates when reviewed submittals will be needed.
- 28.2 Submit Shop Drawings as per provision given in Sub-Clause 19.5 (a) and number of copies of Product Data which the Contractor requires for distribution plus four copies which will be retained by the Engineer.
- 28.3 Submit three samples unless otherwise specified.
- 28.4 Accompany submittals with transmittal letter, in duplicate, containing:
- Date
  - Project title and number
  - Contractor's name and address
  - The number of each Shop Drawing, Product Data and the Sample submitted.
  - Notification of deviations from Contract Documents.
  - Other pertinent data.

## 29 RESUBMISSION REQUIREMENTS

Shop Drawings:

- Revise initial drawings as required and resubmit as specified for initial submittal.
- Indicate on drawings any changes which have been made by the Engineer.
- Product Data and Samples: Submit new data and samples as required for initial submittal.



**30 WEEKLY PROGRESS REPORT AND PHOTOGRAPHS**

- 30.1 During the continuance of the Contract, the Contractor shall submit weekly progress on forms as approved by the Engineer. Such weekly reports shall show the actual progress completed as of date of the report plotted against the schedule as given by the Contractor at the start of work and shall be broken down so as to indicate status of all activities associated with mobilization design, material procurement, manufacture, surveys works, tests with regard to the agreed contract programme.
- 30.2 The Employer and the Engineer reserve the right to coordinate the schedules of this Contractor and other Contractors working at the Site, and to adjust and/or change any and all such schedules as required during the course of construction in order to achieve a coordinated project in harmony with the Employer's completion date.
- 30.3 Commencing after the first week of construction, and continuing every week until completion, the Contractor shall take and submit photographs to the Engineer's Representative, to show progress of his work and completion of each structure or major feature.

**31 CONTRACTOR TO NOTIFY DELAYS ETC.**

Any delay which will affect the completion of Works shall be detailed by the Contractor who shall state the action he is taking for effective completion of the Contract programme.

The Contractor shall submit a report in respect of the various sections of the Works, the equipment in use or held in readiness, a return of labour and supervisory staff, and details of any matters arising which may generally affect the progress of the work.

The Contractor shall give a summary of the detailed progress report giving the position with regard to the agreed Contract programme.

The progress reports shall be set out in a format to the approval of the Engineer, and forwarded promptly so that on receipt the information contained therein is not more than 21 days out of date.

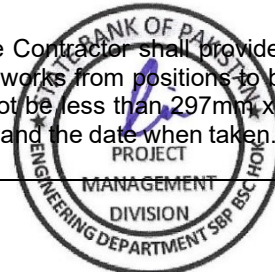
If during execution of the Contract, the Employer considers the progress position of any section of the work to be unsatisfactory, or for any other reason relating to the Contract, he will be at liberty to convene a meeting and the Contractor's Representatives are to attend such meeting.

The Contractor's Site Office shall prepare and submit 6 copies of a weekly progress report to the Employer and Engineer's Site Office. This report shall summarize site activities and record and details where difficulties in maintaining the agreed programme are being experienced or are likely to cause subsequent delay.

The Contractor's Site Office shall also prepare and submit to the Engineer's Site Office 2 copies of Daily Activity Report summarizing the main activities to be undertaken each day, noting special activities such as tests, alignment checks, etc. The Contractor shall be responsible for expediting the delivery of all material and equipment to be provided by him and his subcontractors.

**32 PHOTOGRAPHS**

As soon as work commences on Site, the Contractor shall provide at least 10 to 12 photographs (along with soft copy) of the works from positions to be selected by the Engineer. Each photographic print shall not be less than 297mm x 210mm and shall bear a printed description, a serial number and the date when taken.





The negatives/soft copy of all photographs shall be held at the Contractor's Site Office, numbered and handed over to the Employer at the completion of the Contract.

**33 SIGN BOARD**

The Contractor shall erect and maintain at the Site in a location to be approved by the Engineer two (2) Sign Boards of dimensions approved by the Engineer. The Sign Boards shall be made of metal. It shall be mounted on steel posts securely anchored and braced. The Contractor shall paint on the Sign Boards, the name of the Works, and the names of the Employer, Engineer and the Contractor both in English and Urdu Language.

**34 Site Office(s) and Facilities for the Employer/ Employer's Staff**

The Contractor shall construct, provide, furnish and maintain for the Employer, a site office as approved by the Engineer/Employer along with stabilized access road.

The Contractor shall provide the said site office facility in fully furnished portable containers of minimum size 8'x40'. In case of space limitation, double story containers along with staircase and front platform, for access to the offices at the upper level, can also be provided. The Contractor shall provide office facility for 5 officers of the Employer which includes an executive office chair along-with desk, side rack and two visiting chairs for each officer of the Employer or as approved by the Engineer/Employer. The Contractor shall also provide file cabinets of 100sft with lock and key for the said site office. The Contractor shall also provide a meeting room with a meeting/conference table and chairs for 10 persons or as approved by the Engineer/Employer. The Contractor shall provide 02 Nos. portable toilets with all sanitary fittings & fixtures and hot and cold water supply & sewerage system necessary for its operation at the site.

In addition to above, the Contractor is also responsible for provision of the following:

Sr. #	Brief Description of Item	Qty	Unit
1.	Providing of 5 seater Sofa Set of Master Offisys Sofa MO-SOF-06 type with center table or approved equivalent or as instructed by the Engineer including the cost of carriage to the site.	1	No
2.	Providing and installation of Split Inverter Reversible Type AC units of 1.5 ton capacity of Gree or approved equivalent to be installed on the office containers including cost of carriage, installation, operation and maintenance throughout the duration of the Contract complete in all respect as instructed by the Engineer.	4	Nos
4.	Providing and installation of UPS 5KVA (For PCs backup power supply) with batteries complete in all respect as instructed by the Engineer including maintenance throughout the duration of the Contract.	1	No
5.	Supply and installation of A3 size Black Laserjet network multifunction printer with duplex printing, scanning, and copying of make HP LaserJet MFP M440NDA or approved equivalent complete in all respect as instructed by the Engineer.	1	No
6.	Providing of Laptop Computer of make HP or equivalent professional series having processor of Intel Core i-7 latest generation, at least 8 GB RAM with at least 1 TB hard	5	No



Sr. #	Brief Description of Item	Qty	Unit
	drive or approved equivalent as instructed by the Engineer.		
7.	Supply and installation of Multimedia projector for meeting room of make BenQ MX720 or approved equivalent including wall mounted Automation pull Down Projector screen complete in all respects as instructed by the Engineer.	1	No
8.	Supply and Installation of A3 Size Color Deskjet printer of make HP or approved equivalent including networking function complete in all respects as instructed by the Engineer.	1	No
9.	Supply of Hot & Cold Water Dispenser of DAWLANCE WD 1060 type or approved equivalent complete in all respect as instructed by the Engineer.	1	No
	<b>Other Facilities</b>		
10.	Providing and fixing of Sand buckets with sand along with stand complete in all respect as approved by the Engineer.	3	Nos
11.	Providing & fixing dry chemical powder fire extinguisher 6 Kg capacity, stored pressure type, SFFECO or approved equivalent including clamping/ brackets.	5	Nos
12.	Providing of Measuring tape of at least 10m length or as instructed by the Engineer.	2	Nos
	<b>Communication Facilities</b>		
13.	Providing and installation of Phone line and telephone set of make Panasonic type KX-TS880 or approved equivalent complete in all respect as instructed by the Engineer.	5	Nos
14.	Providing and installation of Internet Connection Wired and wireless with a speed of at least 10 Mbps including setting up/connection with all desktop PCs and laptop of the Employer's staff complete in all respect as instructed by the Engineer.	1	No
15.	Providing of High Resolution Digital Camera make Sony HX99 Compact Camera or approved equivalent as instructed by the Engineer.	2	Nos
16.	Providing of USB 3.0 of at least storage capacity of 16 GB of make Transcend or approved equivalent as instructed by the Engineer.	2	Nos
17.	License for cloud based video conferencing platform (zoom) with provision for 100 participants, up to 30 hours per meeting duration & 5 GB of cloud recording storage.	1	No.
	<b>Health and Safety Equipment</b>		
18.	Providing of Safety Helmets of make 3M or equivalent as instructed by the Engineer.	15	Nos
19.	Providing of Safety Jackets of make 3M or equivalent as instructed by the Engineer.	15	Nos
20.	Providing Safety Shoes of make 3M or equivalent as instructed by the Engineer.	15	Nos
21.	Providing of Safety Restraint belts with Shock Absorbing Lanyard of make 3M or equivalent as instructed by the Engineer.	5	Nos

The Contractor shall provide replacement of the equipment(s), if any of the above mentioned equipment(s) is temporarily or permanently rendered unserviceable for any reason(s) or declared to be beyond repair by the Employer/The Employer's staff at no additional cost to the Employer.



The said office(s) shall be provided by the Contractor within twenty eight (28) days of the receipt by the Contractor of Notice to Commence or twenty one (21) days of the payment of the first half of the Mobilization Advance, whichever earlier. The site office(s) shall be maintained by the Contractor till issuance of Taking-Over Certificate of the whole of the Works by the Employer/Engineer. The site office(s) along with all fittings, fixtures and gadgets shall remain property of the Contractor after the completion of the Works and shall be removed from the site. In such case, the area shall be developed in accordance with the drawings or to its natural state and as per the instructions of the Employer/Engineer.

If the Contractor fails to provide Site office(s) and facilities as stipulated above, then in any such case the Employer may deduct an amount of Rs. 500,000/- per month, which shall be deducted from the Contractor's monthly payment statements for the entire Contract period or till such time that site office(s) and facilities as stipulated above is provided by him. Further, the Employer's office facility, as stated above, will be arranged by the Employer at the risk and cost of the Contractor and its complete cost will also be deducted from Contractor's monthly payments.

No payment shall be made to the Contractor for the works involved under this Sub-Clause. The cost thereof shall be deemed to have been included in the total price quoted by the Contractor for the works

**35 Transport for the Employer/ Employer's staff**

The Contractor shall provide brand new 1300cc (min.) 01 No. Sedan vehicle (with A.C) along with driver for the Employer's staff to meet transportation needs (anywhere in Pakistan) till expiry of Defect Liability Period of. The Contractor shall be wholly responsible for providing at all times satisfactory vehicle operating services including POL, repair/ maintenance, tolls and insurance cost etc.. In-case of outstation transportation requirement, the contractor will make arrangements for boarding/ lodging of the driver at its own cost. The vehicle shall be provided by the Contractor within twenty-eight (28) days of the receipt by the Contractor of Notice to Commence or twenty-one (21) days of the payment of the first half of the Mobilization Advance, whichever earlier.

Failure of the Contractor to provide the transport facility as stipulated above shall make him liable to bear its cost up to Rs. 240,000/- per month, which shall be deducted from the Contractor's monthly payment statements for the entire Contract period or till such time that transport as stipulated above is provided by him. Further, the Employer's transport facility, as stated above, will be arranged by the Employer at the risk and cost of the Contractor and its complete cost will also be deducted from Contractor's monthly payments.

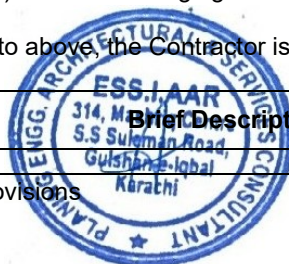
No separate payment shall be made to the Contractor for the facilities involved under this Clause. The cost thereof shall be deemed to have been included in the total price quoted by the Contractor for the Works.

**36 Accommodation Facility for the Engineer/ Employer's Staff**

The Contractor shall provide and maintain accommodation facility having at least five (05) fully furnished bedrooms each having minimum 1.5 TR AC with attach bathrooms (with hot and cold water supply), kitchen and drawing/dining room duly furnished (dining table, chairs, 40" LED TV etc.) for the Employer's team to meet the housing needs till issuance of Taking-Over Certificate of the whole of the Works. The said facility shall be preferably within 2 KMs distance from the construction site of the project. The Contractor shall be wholly responsible for payment of all the utility bills including Electricity, Gas, POL, TV Cable & 10 Mbps Internet and back-up power generator(s) etc. for the lodging facility.

In addition to above, the Contractor is also responsible for provision of the following:

Sr. #	Brief Description of Item	Qty	Unit
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1.	Providing and installation of Refrigerator of 16Cft Capacity of Make Dawlance or approved equivalent complete in all respect as instructed by the Engineer.	1	No
2.	Providing & installation of Electric stove/Induction Cooker of Phillips make hd4932/000 or approved equivalent complete in all respect as instructed by the Engineer.	1	No
3.	Providing of Dinner set of at-least 42 pieces for six persons or as instructed by the Engineer.	1	No
4.	Providing of Hot & Cold Water Dispenser of DAWLANCE WD 1060 type or approved equivalent complete in all respect as instructed by the Engineer.	1	No
5.	Providing of Microwave Oven of make Dawlance DBMO-251G type or approved equivalent complete in all respect as approved by the Engineer.	1	No

The Contractor shall provide replacement of the equipment(s), if any of the above mentioned equipment(s) is temporarily or permanently rendered unserviceable for any reason(s) or declared to be beyond repair by the Employer/The Employer's staff at no additional cost to the Employer

The said facility shall be provided by the Contractor within twenty-eight (28) days of the receipt by the Contractor of Notice to Commence or twenty one (21) days of the payment of the first half of the Mobilization Advance, whichever earlier.

Failure of the Contractor to provide the accommodation/ lodging facility as stipulated above shall make him liable to bear its cost up to Rs. 500,000/- per month, which shall be deducted from the Contractor's monthly payment statements for the entire Contract period or till such time that accommodation/ lodging facility as stipulated above is provided by him. Further, the Employer's accommodation facility, as stated above, will be arranged by the Employer at the risk and cost of the Contractor and its complete cost will also be deducted from Contractor's monthly payments.

No separate payment shall be made to the Contractor for the facilities involved under this clause. The cost thereof shall be deemed to have been included in the total price quoted by the Contractor for the Works.

### 37 Coordination of Work at Site

The Contractor shall take cognizance that during the execution of the project, other Contractor will be working concurrently on this site.

All works of his responsibility shall be coordinated by the Contractor so as to give the necessary facilities to other Contractor or their workman or any other employ, who execute or supervise any work on the site.

The Contractor shall ensure that the necessary safety precaution will be observed and interferences shall be avoided specially for the works executed side by side by different Contractors.

Due consideration must be given to permit access to sections of the work as required by other Contractors for the extension of their works. With a view to coordinate the works, the Engineer may from time to time direct the order of the works to be carried out.

No payment shall be made to the Contractor for the works involved under this sub clause.



**38 Site Facilities to be Provided by The Contractor**

38.1 General

Without prejudice to the generality of the various clauses of the Contract, particular attention is drawn to the obligation of the Contractor to make his own arrangement at his own expense for the following.

38.2 Labour Camps and Staff Residences

The Contractor shall provide, operate and maintain labour camps and staff residences and are required for the proper and efficient progress of the work to house his own employees. For the purposes of operation and maintenance of the Camps and Residences, the Contractor shall comply with the rules of Pakistan Labour Camp Rules 1960 and all other applicable provisions of the Pakistan Labour Laws.

38.3 Administrative and Field Office

The Contractor shall provide, operate and maintain administrative and field offices required for his staff and would be responsible for Operation and Maintenance, furniture, equipment, appliances, janitor services and security of the same.

38.4 Work yards and Storage Areas

The Contractor shall provide, operate and maintain all sheds, fencing, foundations and all above ground structures required to store material or equipment brought on to the site by him. The Contractor shall be responsible for the security of his entire camps, residence, site and field offices work yard and storage area.

38.5 Water Supply, Sewerage System and Electricity

The Contractor shall make his own arrangement, at his own expense for provision, operation and maintenance of electric supply, reasonable supplies of raw and potable water and sewerage system at the site of works and his labour camps, staff residences and offices. The Contractor shall pay all fees, and charges (including bills) of whatsoever nature to the concerned departments (if any) in order to procure connections of the above facilities and thereafter using these facilities.

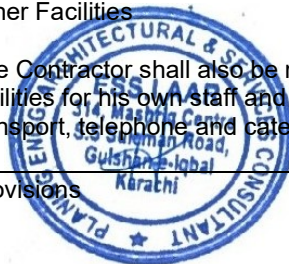
38.6 Medical Care

The Contractor shall arrange provision of adequate medical facilities for his employees.

Adequately equipped and properly staffed first aid stations or dispensaries shall be provided by the Contractor at camps and other strategic locations, to administer first aid treatment at all times free of charge to all persons on the Site, including personnel of the Engineer and the Employer. The nature, number and location of facilities furnished and the Contractor's staff for administering first-aid treatment shall meet the requirements of the Health Services of the Government of Pakistan and of Section III of the Manual "Safety Requirements for Construction by Contract", published by the Employer, and shall be subject to approval by the Engineer.

38.7 Other Facilities

The Contractor shall also be responsible for providing at his own cost other facilities for his own staff and labour such as educational, recreational, transport, telephone and catering if required.



**39. CONSTRUCTION PROCEDURES**

The Contractor shall advise the Engineer of proposed construction procedures in accordance with the General Conditions of Contract.

If the Engineer shall see that the work progress is slow in such a way that the work will not be completed in the time specified, then he shall order the Contractor to work overtime or in more shifts and the Contractor shall obey these orders without any additional payments and without any objections or request for compensation.

**40. NOTIFICATION TO ENGINEER**

The Engineer shall be notified daily in writing of the nature and location of the Works the Contractor intends to perform the next day so as to enable necessary inspection and measurement to be carried out. The Engineer may, if necessary, direct that longer notice be given of certain operations.

**41. NIGHT WORK**

When work is done at night the Contractor shall maintain from sunset to sunrise such lights on or about his work and plant as the Engineer may deem necessary for the proper observations of the work and the efficient execution thereof.

**42. WEATHER**

No work is to be undertaken when, in the opinion of the Engineer, the weather is so unsuitable that proper protection of the work cannot be ensured.

**43. CO-ORDINATION WITH OTHER CONTRACTORS**

It shall be the responsibility of the Contractor to keep-up good relations with other Contractors employed on site by the Employer. The Contractor shall cooperate and coordinate his work with that of the other Contractors working at the Site, to whatever extent may be necessary to complete the Project in accordance with the approved programme of the Works and in accordance with the Engineer's instructions. Should a disagreement or dispute arise between the Contractor and other contractors, the same shall be referred without delay to the Engineer for his decision. Upon such decision, the Contractor shall proceed with the work in accordance therewith. In case the access to the works of other contractors is through the Site area of the Contractor, the Contractor shall coordinate with and permit all reasonable access to other Contractors.

**44. ACCIDENT PREVENTION, SAFETY MEASURES AND PROTECTIVE EQUIPMENT**

The Contractor shall comply and enforce compliance by all his sub- contractors with the highest standards of safety and accident prevention in accordance with international standards and in compliance with all applicable laws, ordinances and statutory provisions.

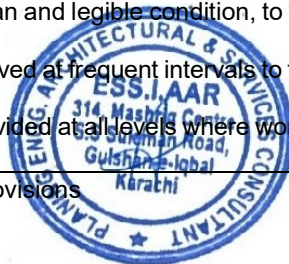
All requisite barriers, fences, warning signs, lights and other safety precautions as required for the protection of persons and property on or adjacent to the site shall be provided at the Contractor's cost.

All false work, scaffolding and handrails shall be well constructed and secured at all times. Where overhead work is being carried out, warning signs shall be installed at ground level clearly warning of the overhead work.

All warning signs shall be in two languages, English and Urdu, and shall at all times be maintained in a clean and legible condition, to the satisfaction of the Engineer.

Trash shall be removed at frequent intervals to the satisfaction of the Engineer.

Netting shall be provided at all levels where work is in progress, all around the building.



#### 45. SETTING OUT OF WORK AND SURVEY

##### 45.1 Reference Points, Lines

The Contractor shall establish benchmarks and / or reference line at the Site in accordance with the instructions of the Engineer. The Contractor shall set out its work from these benchmarks and lines. The Contractor shall supply plant, equipment, materials and labour for checking if required of the survey control by the Engineer. Slope stakes will be set by the Contractor before commencement of excavation and will be re-established as required during progress of work using established bench-marks and reference points.

##### 45.2 Verification

The Engineer may make checks as the work progress to verify lines and grades established by the Contractor and to determine the conformance of the work as it progresses with the requirements of the Drawings and Specifications. Such checking by the Engineer shall not relieve the Contractor of his responsibility to perform all work in accordance with the Drawings and Specifications and the lines and grades given therein.

Based upon the basic control, the Contractor shall provide his own primary control points, as needed for the Works, and shall preserve and maintain them until otherwise authorized.

The Contractor shall be responsible for maintaining all survey markers/monuments, and property corners. If any markers/monuments are destroyed by the Contractor, the Contractor shall arrange, at his own cost, to retrace and replace them to the entire satisfaction of the Engineer. If a monument cannot be replaced in its original position, the Contractor shall install a witness corner. The Contractor shall complete and file monument reference cards on all monuments as per instructions of the Engineer.

The Contractor shall provide experienced construction surveyors with adequate experience in the construction surveys similar in nature as required by this Contract.

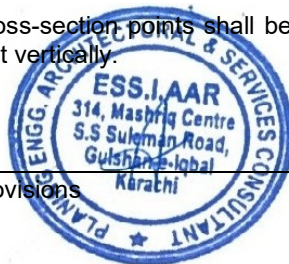
Based upon established basic control monuments the Contractor shall establish all lines and grades necessary to control the Works, and shall be responsible for all measurements that may be required for execution of the Works to the tolerance prescribed below.

The Contractor shall perform such surveys and computations as are necessary to determine quantities of work performed or placed during each progress payment period, and shall also perform all surveys necessary for the Engineer to determine final quantities of work in place. The Engineer will determine final quantities based on original ground levels determined by the Contractor and agreed by the Engineer.

The Contractor shall notify the Engineer at least 24 hours before performing a quantity survey and, unless specifically waived, quantity surveys shall be performed in the presence of an authorized representative of the Engineer.

Degree of accuracy for the survey works shall satisfy the following specified tolerances:

- (a) Structure points shall be set within 0.01 foot accuracy from point to point, except where tighter tolerances are required.
- (b) Cross-section points shall be located within 0.10 foot, horizontally and 0.01 foot vertically.



- (c) Permissible closing error for a levelling line meant for establishing Temporary Bench Mark (TBMs) shall not exceed  $0.045 \times \sqrt{M}$  foot, where M is in miles. The permissible closing error shall be duly adjusted.

The Contractor shall provide all materials, equipment and labour required for surveying work, including, but not limited to, instruments, stakes, spikes, steel pins, templates, platforms, and tools, and except as required to be incorporated in the work or left in place, all such materials and equipment, shall remain the property of the Contractor. Surveying instruments shall be in perfect working condition and shall be subject to rigid inspection for proper operation at least after every two weeks of use. Defective instruments shall be promptly replaced or repaired and adjusted to the satisfaction of the Engineer.

Survey data shall be recorded in accordance with recognized professional surveying standards. Original field notes, computations, and other surveying data shall be recorded in the Contractor furnished field books. Notes or data not in accordance with standard formats will be rejected. Illegible notes or data, or use of erasures on any page of a field book will be considered sufficient cause for rejection of part or the entire field book. Copied notes or data will not be permitted; therefore, rejection of part or all of a field book may necessitate re-surveying. Corrections by ruling or lining out errors will be satisfactory.

The cost of all materials, equipment, surveyors and labour required for surveys for the Works and quantity surveys required by this clause shall be deemed to be included in the rates and prices of the various items in the Bill of Quantities and no separate measurement and payment in their respect shall be made.

#### 45.3 Survey Instruments

The Contractor shall maintain at the Site the requisite surveying instruments in perfect working conditions to enable the Engineer's Representative to check levels and lines of the work at all times.

#### 46. ENVIRONMENTAL PROTECTION

The Contractor shall exercise care to protect the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of works. Except where clearing is required for the Permanent works, approved construction roads and the Temporary Works, and for excavation operations, all trees and native vegetation shall be preserved and shall be protected from damage which may be caused by the Contractor's construction operations and equipment. On completion of the works, all work areas shall be smoothed and graded in a manner to conform to the natural appearance of the landscape. Where unnecessary destruction, scarring, damage or defacing may occur as a result of the Contractor's operations, it shall be repaired, replanted, or otherwise corrected as directed by the Engineer at no additional cost to the Employer.

#### 47. PAYMENT OF WORK

No payment shall be made for the works involved within the scope of this section of specification unless otherwise specifically stated in the Bills of Quantities or herein.

The cost thereof shall be deemed to have been included in the total price quoted by the Contractor for the Works.

