

DIVISION 12

FURNISHING

BUILDING WORK

DIVISION 12

FURNISHING

INDEX

SECTION 12620 : Furniture and Equipment

SECTION 12620

FURNITURE AND EQUIPMENT

PART 1: GENERAL

1.01 SCOPE OF WORK

- A Furniture, equipment and accessories specified herein shall be furnished and placed in the rooms, as shown on the Drawings and listed on bill of quantities. All custom made furniture, equipment and accessories shall be the products of manufacturers regularly producing high quality furniture of the types specified.

1.02 RELATED WORK

- A All related Sections for stone, marble, masonry, concrete, wood, steel works ...etc.

1.03 SUBMITTALS

- A Manufacturer's information including catalog numbers, photographs or catalog cuts, materials and construction specifications, and other pertinent data shall be submitted in accordance with Section 01300.

1.04 DELIVERY, STORAGE AND HANDLING

- A All furniture, equipment and fixtures shall be packaged to provide protection during shipping and storage. Each package shall be clearly marked to indicate contents and destination.
- B Furniture, equipment and fixtures shall be stored in their original containers and packaging either on Site or in an acceptable storehouse until delivery is ordered by the Engineer at the completion of all other work.

PART 2: PRODUCTS

2.01 GENERAL

- A The furniture, equipment and fixtures specified are for the Employers use at the destinations indicated Items are specified by manufacturer's or supplier's catalog or stock numbers for convenience of description and to establish an acceptable grade or quality. Items by other manufacturers or suppliers will be acceptable when equal in all respects to those specified.

2.02 FURNITURE AND EXHIBITION ITEMS SCHEDULE

- A. The contractor shall furnish and placed in the rooms all furniture, equipment and accessories items indicated in the drawings.

B. General Remarks

1. Fabric for all cushions should be similar to traditional fabrics of al “Saya” bought easily from the Downtown area of Amman (e.g., similar models exist at Salt Craft Center or Noor al Hussein Foundation).
2. Show Cases, tables for models, raised floors, tables, illustration boards, are similar in manufacturing technique and material, they might differ in size, and the types of exhibits displayed.
3. All carpets used are replicas of traditional carpets made of wool (e.g., similar models exists at Bani Hamida House)
4. Most shelves in niches are made of Oak Wood Pannels supported on steel angles.
5. All picture frames are made out of wood (Teak Burma), with Reflection Free Glass.
6. Within the next table, such repeated elements (show cases, illustration boards, cushions, shelves for display, and other items will not always be mentioned unless there is a major difference in the design.
7. Furniture in administration (F18, F 17) are custom made.

C. Schedule

Item (Furniture or Exhibition Item)	Description
First Floor	
F4: Architecture and Master Builders	
EI: Sectional Model in Abu Jaber	The Model is made out of Pine Wood at scale of 1/10. The Approximate hight for model should be about 2 meters. Model should illustrate room interiors, structural systems, and spatial relationships.
EI: Show Cases T3	Show Cases Should exhibit cardboard models of significant historic urban areas in Salt. The Showcase is made of Reflection-Free Class (joints treated with ultra violet). The Glass Box is inserted in a wooden base of pine wood. Black painted steel is also used. Inside the Glass Box there is a stainless steel stand with halogene spotlight (1 cm. Max. diameter stand and 2.5 max. diameter hidden spotlight). (D.EI.3/HHM.A-601)
EI: Illustration Boards	Gybsum Boards with Flixy Glass (120 * 240) cm. Steel base at the bottom. - 1 Illustration board on the Architecture of Abu Jaber - 2 Illustration boards on significant houses and areas.
EI: Built-in Stone deck (Attribute to Salt Mason and Master Builder: Abd al Rahman Al Aqrouk	A stone deck (7 cm salt stone tiles on a concrete base. Tensile structure on top (fabric) with steel hinges fixed at a fixed height. (D.EI.29/HHM-A.612)
EI: Photographs	Historic Photographs related to stone builders and the process of building masonry structures.
F1 Geography of Salt	
EI: Table for model on the city of Salt	Model should exhibit the topography and built form of the city of Salt. The Glass cover for the model\ is made of Reflection-Free Class (joints treated with ultra violet). The Glass Box is inserted in a wooden base of pinewood. Black painted steel is also used. Inside the Glass Box there is

	a stainless steel stand with halogene spotlight (1 cm. Max. diameter stand and 2.5 max. diameter hidden spotlight). (D.EI.06/HHM.A-602)
EI: Show case on Salt's natural resources	Refer to standard Show case detail (Type 3)
F3: Traditional Hakawati Coffee Shop and F7 Coffee Shop Terrace	
BF: Cafeteria Tables	Table legs are made of Pinewood. Tabletop is made of Sandwich Wood with patterned Ceramic tiles. 2x2 cm Steel bars (painted black) are used for decoration. (D.BF.18/HHM.A-509)
BF: Cafeteria Chair	Chair is made of PineWood. 2x2 cm Steel bars (painted black) are used for decoration. (D.BF.16/HHM.A-508)
BF: Service Counter	Counter is made of Pinewood with steel hardware. 2x2 cm Steel bars (painted black) are used for decoration. A steel plate is added at the bottom (D.BF.04/HHM.A-502)
BF: Round Tables	Table legs are made of Pinewood. Tabletop is made of Sandwich Wood with patterned Ceramic tiles. 2x2 cm Steel bars (painted black) are used for decoration. (D.BF.19/HHM.A-511)
BF: Wooden Platform: Raised Floor	Platform is made of Sandwich Wood that rests on metal grid supported by Grid Metal Channels. (D.BF.34/HHM.A-615)
BF: Book Cabinet	Cabinet is made of Pinewood with 2x2 cm painted black steel bars.
F10: Reception Area and Golden Age Exhibition:	
BF: Counter Historic Door	The top of the counter is made of an existing door shutter taken from Abu Jaber House. 12 mm Steel rods are used for counter legs and frames (D.BF.06/HHM.A-503)
BF: Wooden Shelves	The top of the shelves is made Sandwich Wood. 12 mm Steel rods are used for counter legs and frames (D.BF.14/HHM.A-507)
BF: Low Bench	Bench is made out of Teak Burma Wood. (D.BF.21/HHM.A-511)
EI: Illustration Boards	Please, refer to standard illustration board description.
EI: Show Cases	Please, refer to standard showcases description.
F13 Archaeology Room	
BF: Wooden Raised Floor and Ramp	Platform top is made of Rough-Textured Oak Wood that rests on metal grid supported by Grid Metal Channels. (D.BF.20/HHM.A-607)
EI: Trenches	Existing finish Floor level is left alone. Sand and dirt are added to trenches, exhibits are added between and above sand and dirt
EI: Metal Interpretive Signs	Signs are made of two sheets of flixy glass attached to raised floor with a 12 mm Steel Rod. (D.EI.20/HHM.A-607)
EI: Replica of Peasant House With Kawayer Design	Room is built of rough traditional Salt Stone. The flooring is a thin layer of concrete that rests on a RC tie band. The arch is of RC with a thin layer of masonry. The Roof is made of wooden branches. The "Kawayer" are made of mud reinforced with straw. (D.EI.21/HHM.A-608)
F14: Historic Documents and Photography	
EI: Built in Ground Fixed book holders	This fixture is made of Yellow Salt Stone as shown in detail. A groove for pencils is provided. (D.EI.18/HHM.A-606)
F19: Municipality History	
EI: Map of Balqa Region in Stone	The map is made of local Salt Stone which is added to the floor after taking out existing stone tiles within its domain. Boarder for the recessed part is paneled with a steel plate and a Oak Wood as shown in (D.EI.19/HHM.A-607)

EI: Plackets on iron rods.	Plackets are made of two layers of flixy Glass that is fixed on 12 mm steel rods. (D.EI.19/HHM.A-607)
F20: Medical History	
EI: Wooden Frames holding sacs made out of “Keish” cloth	Oak Bars (2 x 2 cm) are used with “kiech”: cloth for sacs. (D.EI.15/HHM.A-605)
EI: Counter	Material used is Teak Burma Wood. Black steel plates and bolts are used. (D.EI.16/HHM.A-606)
F12: Education History	
EI: Raised wooden Floor and tile patterns	Similar to previous raised floor details, but Patterned Terrazo Tiles are added on top of Sandwich Wood (D.EI.31/HHM.A-613) + (D.EI.30/HHM.A-613)
EI: Wooden window: replica of salt High School.	Sandwich wood fixed with Steel Angles. Ironwork is made of steel bars. (D.EI.31/HHM.A-613)
Second Floor	
S11: Reception	
BF: Reception Counter	Description provided before
BF: Wooden Shelves	Description provided before
BF: Waiting Area Table	Description provided before (D.BF.10/HHM.A-604)
S2: Museum Shop	
BF: Wooden Shelves with Iron Columns	3 cm Teak Burma Wood, 4 cm decorative Steel bars (D.BF.13/HHM.A-507)
BF: Table for exhibiting books	Table made of Pine wood, steel bars are used (D.BF.17/HHM.A-508)
S3: Religious and Wedding Festivals	
EI: Model	Model made of pinewood (elevation of Sukkar House) at scale of 1/10. Approximate hight is about 2 meters.
EI: Raised Floor	Oak wood pannel is used on top. Other details are the same as typical raised floor (provided previously) (D.EI.35/HHM.A-615)
EI: Metal Figures	Metal figures (plates) of human beings scale 1:10
EI: Human Figures in Sogud Position	Human figures (manikan) in Sugod position covered with appropriate clothing.
S4: Traditional Clothing and Weaving	
EI: Changing Room	Room structure is made of iron rods. A cloth curtain is added. (D.EI.25/HHM.A-508)
EI: Wooden Frames carrying Traditional Carpets	Oak Wood frames carrying a Brass Plate to hold information about carpet. (D.EI.24/HHM.A-611)
S7: Musical Instruments and Games	
EI: Arm Chair	Made of Oak Wood with traditional upholstery. (D.EI.13/HHM.A-605)
EI: Table for Traditional Café	Table is made of Oak Wood with Bamboo top. Oak Wood arched legs. (D.EI.17/HHM.A-508)
EI: Chair	Chair is made of Oak Wood, bamboo wood is also used occasionally as in (D.EI.11/HHM.A-604)

S6: Silver, Pottery, and Glass	
EI: Raised Deck	Wooden scaffolding is built to support layed down concrete blocks (7 cm brick). Brick is plastered and painted with a rough texture (white). (D.EI.36/HHM.A-615)
S12+13: Children's Museum	
EI: Raised Floor and Ramp	Similar to previous details (D.EI.22/HHM.A-609)
EI: Salt Bazzar	Oak Wood Panels are used to separate shops. Steel angles and beams are used to fix panels and shop signs. Shop sign is made of oak wood with a brass frame (D.EI.22/HHM.A-609)
EI: Peasant house	Stairs are supported on Steel T sections which are fixed to wall with steel angels and plates. Steps are made of Oak wood supported by steel plates and angles. The Window is made out of Oak wood with brass detailing. House panel is made out of oak wood. (D.EI.23/HHM.A-610)
EI: Small Straw Chair	Chair is made of straw top and oak wood. (D.EI.12/HHM.A-604)
S24: Kitchen	
EI: Working Table	Table made of Teak Burma Wood (D.EI.34/HHM.A-614)
S23: Mouneh Exhibits	
EI: Working Table	Table made of Teak Burma Wood (D.EI.34/HHM.A-614)
EI: "Namliah" food store cabinet.	Made of Pine Wood and 4 mm thick Belgium clear float Glass.
S19: Madafa	
EI: Low Bench Sofa	Bench is made of Oak Wood with Black Steel Detailing. Cushions are provided. (D.EI.39/HHM.A-616)
EI: Low Tables	Description Provided Previously (D.EI.10/HHM.A-604)
EI: Wooden and Straw Chairs	Description provided (D.EI.12/HHM.A-604)
S22: Significant houses details have been provided for items previously.	
S20: Dinning Room Restaurant: details have been provided for items previously.	
S21: Bedroom: details have been provided for items previously. Most items will be bought.	
Ground Floor	
G14+15: Lecture Hall and Temporary Exhibition	
BF: Computer Tables	Tables are made of pine wood top with a circular void for electrical wiring. 2x2cm steel bars (painted black are used for decoration) A sliding drawer is provided. (DBF.23/HHM.A-512)
BF: Low Bench	Explained before
BF: Illustration Boards	Explained before
G16: Souvenir and Handicraft Shop	
BF: Wooden Shelves	Made of Oak Wood with 4 cm steel bars. (D.BF.10/HHM.A-506)
Description for all other items have been provided previously (e.g., show cases, chair, table,) or refer to details annotated on plans.	
G17: Library	
Description for all other items have been provided previously (e.g., show cases, chair, table,) or refer to details annotated on plans.	
G19: Balqa Region Show Room	
Description for all other items have been provided previously (e.g., show cases, chair, table,) or refer to details annotated on plans.	

G7: Museum Entrance	
BF: Counter	Counter is made of concrete faced with Salt Sand Stone (25 cm courses). A Teak Burma wood top is provided. A steel plate is added at the bottom. (D.BF.5/HHM.A-503)
Description for all other items have been provided previously (e.g., show cases, chair, table,) or refer to details annotated on plans.	

Note: The description of certain furniture items or pieces (e.g. illustration boards, show cases, photograph, chairs, tables, ect...) only mentioned once in the above schedule to avoid repetition. Such item exists in most of the rooms, for their description refer to the standard description provided.

2.3 APPROVED MANUFACTURERS AND SUPPLIERS

A. Jwaico Furniture.

B. Foram for Furniture

or other equal and approved

PART 3: EXECUTION

3.01 GENERAL

A All furniture, furnishings and equipment shall remain in their original containers and packaging until delivered to the individual destination at which time they shall be unpacked, assembled as necessary and inspected.

B All items shall be left in proper operating condition. All doors drawers and locks shall operate smoothly and fit properly. Shelves and tops be level and fit snugly.

End of Section

DIVISION 13
SPECIAL CONSTRUCTION

BUILDING WORK

DIVISION 13

SPECIAL CONSTRUCTION

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SECTION 13000 : Exhibition Work

SECTION 13000
EXHIBITION WORK

PART 1 GENERAL

1.01 Work Included

- A. Concrete Work
- B. National Stone Work
- C. National Marble/Granite
- D. Finish Carpentry
- E. Flashing and Sheet Metal
- F. Joint Sealant
- G. Miscellaneous Metal Fabrications
- H. Mortar and Joint Grouting.
- I. Glass and Grazing
- J. Painting
- K. Plastic Work
- L. Graphic
- M. Audio Visual System
- N. Electrical Work

1.02 Related Work

- A. All related works of the Exhibition Work shall be in accordance with the appropriate section of these Specifications.
- B. The Contractor shall coordinate with the relevant Authorities concerned who will be delivered and set exhibit objects during progress of works of this Section.

1.03 Reference Standard

Reference standard shall be in accordance with the appropriate standards of the related section of these Specifications or as directed by the Engineer.

1.04 Submittals

- A. General:
 - 1- Refer to Section 01300 - Shop Drawings, Product Data and Samples, for submittals provisions and procedures.
- B. Shop Drawings and Product Data:
 - 1- Submit shop drawings and product data in accordance with Section 01340.
 - 2- Indicate pertinent dimensioning, layout, construction details, method of installation.
 - 3- Submit detail technical data of the Seismic Isolation System.
 - 4- Submit fabrication and field installation drawings of Exhibition Cases.
 - 5- Submit full scale or at least 1:5 scale shop drawings for the Exhibition Graphic and Models for the Engineer's approval.

C. Design Calculations

- 1- Submit design calculation of the seismic Isolation System for Engineer's approval.

D. Samples:

1. The Contractor shall submit actual sample of materials to be used for the Exhibition Cases, Graphic Work, Models and Screens etc. for Engineer's approval.
- 2- Submit samples of other materials specified herein upon request by the Engineer.
3. No works shall be commenced with approval of the Engineer on samples.

E. Mock Up

1. Furnish and install a full size typical Exhibition Cases designated by the Engineer.
2. All work shall include setting and jointing of all stone including final cleaning as specified herein for the actual work and as required for approval. Construct as many mock-ups until approval by the Engineer has been obtained.
3. The approved mock-up shall constitute the quality of work to be expected throughout the entire project, and shall remain in place for visual inspection until no longer needed as directed by the Engineer. The removal and disposition of the mock-ups shall be done by the Contractor without additional cost to the Employer.

1.05 Guarantee/Warranty

- A. Attention is directed to the provisions of the CONDITIONS OF THE CONTRACT regarding guarantees/warranties for the Work.
- B. The Contractor shall submit a 10 years warranty for the Seismic Isolation System.
- C. All warranties/guarantees to be issued by the Supplier, Manufacturers and sub-contractors shall be counter-signed by the Contractor and will be liable for repair/replace the items/works, etc., during the warrantee/guarantee period.

1.06 Quality Assurance

- A. The work of this Section shall be carried out by an approved contractor having specialized in this work as its primary business for at least 10 years, and having performed satisfactorily work of this type and magnitude.
- C. Employ only craftsmen who are thoroughly skilled in the various crafts, and who are completely familiar with the specified requirements. Provided the services of a competent supervisor who shall be available at all times during the progress of the work of this Section and who shall be designated as the single point of contact within the subcontractor's organization for matters in connection with the work of this Section.
- D. The Engineer reserved the right to reject materials and/or workmanship not conforming to the specifications at any time before final acceptance. The Engineer's Acceptance of materials or workmanship shall not prevent its subsequent rejection if defects are discovered later. The Contractor shall remove installed materials which are rejected by the Engineer and replace them at no cost to the Employer.

1.07 Delivery, Storage & Handling

- A. **PACKING AND LOADING:** Finished materials or pre-fabricated products shall be carefully packed and loaded for shipment using all reasonable and customary precautions against damage in transit. No material which may damage or discolouration shall be used for blocking or packing.

- B. **SITE STORAGE:** Upon receipt at the project site or storage yard, the materials and products shall be stored on the platforms at least 100mm above the ground, and extreme care shall be taken to prevent staining and damaging during storage. If storage is to be for a prolonged period, polyethylene or other suitable plastic film shall be placed between any wood and finished surfaces, and shall be used also as an overall protective covering..

PART 2 PRODUCTS

2.01 Exhibition Glass Cases

- A. Exhibition Glass Cases type/ sizes and case base finishes are as shown on the Drawings

- B. Stone shall be of good quality, sound, free from cracks and defects, seams or starts as specified in the Section 04450 and 04455 of this Specification or within the range of samples approved by the Engineer.

- C. Glass to be used for the Exhibition Cases shall be as shown on the Drawings and in accordance with Section 08800 of this Specification.

- D. Unless specified on the Drawing the Sealant for the Exhibition Glass Cases shall be of the Silicone Sealant as specified in the Section 08800 of this Specification.

2.02 Exhibition Graphic Work

A. General

1. Graphic shall be of the explanation of the exhibit objects by interpretation, illustration, chart and photography
2. The materials to be used for the graphic shall be as shown on the Drawings.
3. Unless otherwise stated on the Drawing or instructed by the Engineer, language of the Graphic shall be Arabic and English.

B. Block Copy of graphic

1. The Manuscript of the interpretation, illustration, chart, negative and object's explanation for the graphic, together with layout, shall be provided by the Engineer.
2. The Block copy of graphic shall be provided and submitted by the Contractor based on the manuscript forwarded by the Engineer.
3. Submit full scale or at least 1:5 scale shop drawings for the Exhibition Graphic and Models for the Engineer's approval.
4. The type of Letters, colour of illustration shall be as directed by the Engineer.

C. Illustration

1. Illustration manuscript shall be based on the situation given by the Engineer and included necessary information and photographs.
2. Primary sketch of the illustration shall be approved by the Engineer before proceeding further work.

D. Data Block Copy

1. Data shall be included all information of panels and size shall be of the 1/1 or 1/2 of the final size shown on the Drawings.
2. The software, font and colour mode of the data shall be compatible with the output equipment.
3. The illustration and photograph shall be scanned more than 150dpi resolution of finished size.

E. Block Copy Proofread

1. Proofread of block copy shall carried out based on the output of the data and shall be approved by the Engineer.
2. After proofreading, data shall be back-up and served on CD-ROM.

F. Photos, Object duplication and Inter-negative

The sizes of film against the finished graphic sizes are as shown table below:

Finished Graphic Size	Film Size
Up to 600mm X 900mm	35mm
Up to 1,000mm X 1,000mm	6 x 7
Up to 2,000mm X 2,000mm	4" x 5"
Above 2,000mm X 2,000mm	8" x 10"

G. Extended Paper

1. The "Colour Paper" shall be of Kodak Colour Paper or Fuji CG Paper or equivalent approved by the Engineer.
2. The "Normal Paper" shall be of Inforspeed 44M, Oriental Eagle RP-R, Fuji Bromod WP-FM, Kodak Poli-contrast III-RC or equivalent

approved by the Engineer.

3. Any trimming shall not be done without approved by the Engineer.
4. The following samples for colour-test-pieces shall be submitted to the Engineer for his approval.

Film size with 35mm for finish size of above 2,000mm

Film size with 6 x 7 for finish size of above 2,000mm

Film size with 4" x 5" for finish size of above 2,000mm

H. Extended Film

“Colour Film” for either Acrylic, Glass Sand Style or Daifit process Spring Style shall be of Kodak duran-tramse-display material 4022 or Fuji Colour Professional or equivalent approved by the Engineer.

I. Silk Screen Process

1. 225 Mesh for Silk Screen mesh line drawing and 250 Mesh for aluminium plate shall be used.
2. “Plate” shall be of the lumiler 100micron (Tetron) T Type manufacturing by Tore or equivalent approved by the Engineer.
3. “Ink” shall be of the Seiko Advance VIC, Teikoku Ink NAC or equivalent approved by the Engineer.
4. 1H1C shown on the Graphic Drawing mesa one plate one colour

J. Dry-mount

Dry-mount shall be of printing Paper heat applied on the Polystyrene board or equivalent approved by the Engineer.

K. High quality Paper

Special paper "Tant Paper 70kg" or equivalent approved by the Engineer.

L. Cutting Sheet

The Cutting sheet shall be of the "Nalagawa Chemical CS200" or equivalent approved by the Engineer.

M. Primary printing

The quality of Primary printing shall be at least equivalent of "Laser Lighter" output or equal.

N. Ink-jet Output

The quality of Ink-jet output shall be at least equivalent of "NOVA JET 11" output or equivalent and printing paper shall be of the type recommended by the Printer manufacturer

O. Digital

The quality of digital output shall be at least equivalent of "LIGHT JET 5000" output or equivalent and printing paper shall be of the type recommended by the Printer manufacturer

P. Electrostatic Output

The quality of electrostatic output shall be at least equivalent of "VERSATEC-8944" output or equivalent and printing paper shall be of the type recommended by the Printer manufacturer

Q. Output Paper Process

1. Output paper shall be completely dried before stating process.

2. The processing method, such as “Ademuco Laminate”, “UV Laminate”, “Chemical Laminate”, Poly-mount” or “Metal-mount” shall be decided based on the use of Printing paper, exhibition location and effectiveness as directed by the Engineer.

R. Coating

1. Coating shall be Acrylic resin clear lacquer manufactured by “KANSAI PEINT” or equivalent approved by the Engineer.
2. Spray coating shall be applied at least 2 times to achieve uniform printing quality.

S. Copyright

Copyright for photograph, illustration, chart and text of interpretation used for exhibition shall be confirmed and approved by the Engineer.

2.03 Exhibition Model Work

A. General

1. Data for provision of Exhibition Models shall be given by the Engineer or as shown on the Drawings.
2. The confirmation with the related Authorities and collaborator to the preparation of Exhibition Models shall be done by the Engineer.
3. No manufacturing of models shall be started before shop drawing and miniature sample of models are approved by the Engineer.
4. The materials to be used for the models are as shown on the drawings and sample of all materials shall be submitted to the Engineer for his approval before state any work.

5. Models shall be inspected by the Engineer at workshop or factory before delivery to the Site.

B. Models

1. Topographic Model

- a) The topographic map with contour and colour photography, aerial photography, drawings and charts shall be supplied by the Engineer. The topographic shall be produced by the microphotography then enlarged to the specified model scale. The cover area, vertical scale, thickness etc. shall be as approved by the Engineer.
- b) A contour line shall be prepared layer-by-layer with hard board, acrylic plate and cork plate.
- c) The colour of the model shall be referred to an aerial photography.
- d) The type of models are graded as “Lank B”, Lank C” and “Lank D” as listed on the Drawings.
- e) The model size, basic material of model, type and finishes of model bases, etc shall be as shown on the Drawings.

2. Building Model

- a) The historical building model drawings shall be supplied by the Engineer.
- b) The Contractor shall provide a partial sample of building model for the Engineer’s confirmation on accurateness and expression of the model.
- c) No model shall be manufactured before the Engineer’s approval.

- d) Where people model are required in the building model, a clothes and hairstyle etc shall be confirmed by the Engineer.
- e) The type of building models are graded as “Lank B” and Lank C” as listed on the Drawings.
- f) The model size, basic material of model, type and finishes of model bases, etc shall be as shown on the Drawings

C. Georama Model

1. Site Inspection

Prior to preparation of Georama Model, the Contractor shall conduct investigation on the environmental conditions such as humidity, wind, sunlight and other available data of the site location, together with the Engineer.

2. Topography

- a) Materiel to be use for Georama Model shall be as shown on the Drawing.
- b) Unless otherwise specified on the drawing or directed by the Engineer, the following materials shall be used on the formed urethane bases on the steel frame or wooden frame:
 - i. Rocks: FRP
 - ii. Topography: Polyester
 - iii. Water: Transparency Polyester

3. Background

- a) The Contractor shall provide “Preliminary Painting” and submit to the Engineer for his confirmation on painting area and expression etc. before starting work.

- b) Paint shall be of the water based paint or Acrylic resin paint applied on the Plywood, FRP or gypsum board bases with Hessian cloth at board joints.

4. Replica/ Real Plant

- a) Where real trunk and branch are specified on the drawings or directed by the Engineer, real trunk and branch shall be completely dried and treated before incorporated to the model.
- b) Where replica is specified on the drawings, the model shall be taken from real fresh subject and colour on the vacuum formed polyvinyl sheet. All replicas shall be approved by the Engineer.
- c) Where treatment of colour on real subject is required, subjects shall be completely dried and preserved.
- d) The type of Georama Models is graded as “Lank A” as shown on the Drawings.
- f) The model size, basic material of model, type and finishes of model bases, etc shall be as shown on the Drawings

2.04 Exhibition Movie and Audio System

A. General

Exhibition Movie and Audio System consist as follows:

1. Hardware: Power, equipment, electricity, lighting control, computer, movie, and audio equipment as all necessary accessories.
2. Software: programme, scenario for interpretation action and control.

B. Hardware: Materials, Equipment, Products and Accessories

1. All materials, equipment, products and accessories to be used for this Section shall be of new and approved by the Engineer. The configuration of system shall be as shown on the Drawings.
3. The unit assembly system for power, movie, audio equipment as much as possible for easy inspection and disassembly when needed. Wiring between units shall be used exclusive connectors for units.
4. Cable for Movie signal shall be of the 5C2VC cable or equivalent approved by the Engineer. 3 wires cable with ground and socket shall be used in case the power supply is connected to an existing receptacle.
5. During setting of the equipment, such as, volume and switch shall be attended by the Engineer and marked when final turning is confirmed by the Engineer.
6. The Contractor shall submit 2 copies of A4 size Operation and Maintenance Manual, Warranty Certificate, Spare Parts List and contact person/number for maintenance period.
7. The Contractor shall submit tools and spare parts.

C. Movie, Audio Producing

Movie and audio software production shall means movie and audio program record on leaser disk, sound ROM, hard disk, recorded by movie and audio equipment, and computer.

1. General

- a) The Contractor shall select a team of movie and audio production staff, who have full knowledge of this exhibition movie and audio to actualize contents of the Zionism.

- b) The Contractor shall provide the rough scenario based on the scenario, data and information supplied by the Engineer. The final scenario shall be approved by the Engineer.
- c) The cutting of film at each stage such as rough cutting, final cutting, narration record and preview of film shall be attended and approved by the Engineer.
- d) Completed original of software shall be kept as directed by the Engineer. Additional set of leaser disk for maintenance shall be provided and submitted to the Engineer.

2. Source

- a) Unless otherwise specified, the source for movie is as follows:
 - i. Existing movies
 - Contents: News, History, Sky
 - Source: Video production company, Local council, Authorities concerned, broadcasting etc.
 - ii. New movies
 - Shooting: Location and Studio
- b) Unless otherwise specified, copyright of movie, audio and system diagram shall be handle by the Employer.
- c) The Engineer shall provide the reference picture or computer picture, which are permitted to use for this work.

3. Copyright

- a) The right of running a complete movie, audio program and software are hole by the Employer.
- b) Copyright except right of running, right of translation and right of author for the completed movie and audio program using new source

for preparation of movie and audio program is hold by the Employer.

- c) If the movie and audio program are used for the other purposed such as modification, distribution and running with purposes other than mentioned above or cut film shall be obtained consensus from the Employer.

4. Installation

- a) Electrical work shall be in accordance with the appropriate section of Division 16 “Electrical Work”
- b) Direct electrical circuit shall use rectification of circuit to provide stabilize electricity.
- c) The short-circuit breaker shall be installed in electrical circuit of equipment for safety device.
- d) Earth unit have own breaker, safety device such as fuse and protection circuit.
- e) Assembled unit parts, terminal and connector shall be indicated with nameplate as specified on the Drawings.
- f) The power supply for earth equipment shall be provided through own branch circuit from switchboard. Provide 2 receptacles and maintenance light to each equipment for future maintenance, as directed by the Engineer.
- g) The equipment with driving power shall provide test switch nearby the equipment.
- h) The wire shall be prepared on printed plate and assembling, and wiring on metallic assembles plate to assemble the electronic parts. The control parts such as micro switch, time relay shall be of the type approved by the Engineer.

- i) An approved type of push batten for visitor shall be used. Colour of batten shall be as directed by the Engineer.
- j) Fluorescent lamp for blinking signal shall be used electronic light.
- k) 3 Wires cap-tire cable with ground wire shall be used.
- l) The internal of equipment shall provide an exhauster to prevent a hest from machine and/or forced cooling fan. Anti-dust shall also be installed.
- m) Computer shall be of the product manufactured by the same manufacturer as much as possible. The noise of the power supply and between accessories of the computer shall be provided.
- n) The strength of equipment shall be prepared a calculation report and approved by the Engineer.
- o) The weight balance and precision for rotation parts shall be secured. Movable parts shall be installed secure metal plate or metal angle base.
- p) Easy lubricating oil refilling, easy parts replacing and easy inspection shall be considered.
- q) The high rotation part shall be of bearing type. Vibration isolation for movable part and anti-collision shall be provided as directed by the Engineer.
- r) An approved screw shall be used. Head of the bolt nuts shall be marked with paint after screwed. The screw shall be checked and re-screwed one month after handing over the work.
- s) The Contractor shall provide a plate indicated manufacturer's name, date of manufacture, model number and contract number for each equipment.

PART 3 EXECUTION

Unless otherwise specified in this Section of Specification, all related works shall be in accordance with appropriate section of those Specifications.

END OF SECTION