

DIVISION 1
GENERAL REQUIREMENTS

BUILDING WORK

DIVISION 1

GENERAL REQUIREMENTS

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**SECTION 01010
SUMMARY OF WORK**

PART 1 GENERAL

1.01 Work Covered By Contract Documents/Requirements Included

- A. The Work of this Contract comprises but not limited to the construction, completion and maintenance of the **Structural Works Architectural Works, Mechanical Works, Electrical works, External Works, Exhibition Work and Sundry Items of the National Museum Sub-Project – Amman**”, all as more particularly specified and covered in the relevant Bill of Quantities.

1.02 Related Requirements

- A. Instructions to Tenderers.
- B. Conditions of Contract.

1.03 Contracts

- A. The Contract Work is under a "Re measured" Contract.

END OF SECTION

**SECTION 01039
COORDINATION AND MEETINGS****PART 1 GENERAL****1.1 Section Includes**

- A. Coordination.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Preinstallation meetings.
- F. Examination.
- G. Preparation
- H. Cutting and Patching.
- I. Alteration Project Procedures.

1.2 Related Sections

- A. Section 01041 - Project Coordination.
- B. Section 01049 - Mechanical and Electrical Coordinator.
- C. Section 01050 - Field Engineering.

1.3 Coordination

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to assure efficient and orderly sequence of installation of interdependent construction elements , with provisions for accommodating items installed later.

1.3 Coordination (Cont'd)

- B. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- C. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- D. Coordinate completion and clean up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Employer's partial occupancy.
- E. After Employer occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Employer's activities.

1.4 Preconstruction Meeting

- A. Employer and the Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required: Employer, the Engineer and Contractor.
- C. Agenda:
 - 1) Execution of Employer-Contractor Agreement.
 - 2) Submission of executed bonds and insurance certificates.
 - 3) Distribution of Contract Documents.
 - 4) Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 5) Designation of personnel representing the parties in Contract, and the Engineer.
 - 6) Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract close-out procedures.
 - 7) Scheduling.
 - 8) Scheduling activities of a Geo-technical Engineer.

1.4 Preconstruction Meeting (Cont'd)

- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Employer, participants, and those affected by decisions made.

1.5 Site Mobilization Meeting

- A. The Engineer and/or Employer will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required: Employer, Engineer, Contractor, and major Subcontractors.
- C. Agenda:
 - 1) Use of premises by Employer and Contractor.
 - 2) Employer's requirements.
 - 3) Construction facilities and controls provided by Employer.
 - 4) Temporary utilities provided by Employer.
 - 5) Survey and building layout.
 - 6) Security and housekeeping procedures.
 - 7) Schedules.
 - 8) Procedures for testing.
 - 9) Procedures for maintaining record documents.
 - 10) Requirements for start - up equipment.
 - 11) Inspection and acceptance of equipment put into service during construction period.
- D. Record minutes and distributes copies within two days after meeting to participants, with two copies to the Engineer and Employer, participants, and those affected by decisions made.

1.6 Progress Meetings

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Main Contractor, major Subcontractors and Suppliers, Employer, the Engineer as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems which impede planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to the Engineer, Employer, participants, and those affected by decisions made.

1.7 Pre-installation Meeting

- A. When required in individual specification sections, convene a pre-installation meeting at work site prior to commencing work of the section.
- B. Require attendance of parties directly affecting, or affected by, work of the specific section.
- C. Notify the Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1) Review conditions of installation, preparation and installation procedures.
 - 2) Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to the Engineer, Employer, participants, and those affected by decisions made.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

END OF SECTION

**SECTION 01041
PROJECT COORDINATION****PART 1 GENERAL****1.1 Section Includes**

- A. Project coordination by the Project Coordinator.
- B. Schedules.
- C. Close-out procedures.
- D. Submittals.
- E. Coordinate drawings.
- F. Close-out Procedures.

1.2 Related Sections

- A. General Conditions.
- B. Section 01010 - Summary of Work.
- C. Section 01039 - Coordination and Meetings.
- D. Section 01700 - Contract Close-out.

1.3 Construction Mobilization

- A. Cooperate with the Engineer in allocation of mobilization areas of site; for field offices and sheds, access traffic and parking facilities.
- B. During the work, coordinate use of site and facilities through the Engineer.
- C. Comply with Project Coordinator's procedures for intra-project communications; reports and records, schedules, and recommendations; and resolution of ambiguities and conflicts.

1.3 Construction Mobilization (Cont'd)

- D. Comply with instructions of the Engineer for use of temporary utilities.

1.4 Submittals

- A. Submit applications for payment on forms for review, and to The Engineer Approval.
- B. Submit requests for interpretation of Contract Documents, and obtain instructions through the Engineer.
- C. Process requests for substitutions, and change orders, through the Engineer.
- D. Deliver close-out submittals for review and preliminary inspection reports, to The Engineer.

1.5 Coordination Drawings

- A. Provide information required by the Engineer for preparation of coordination drawings.
- B. Review drawings prior to submission to the Engineer.

1.6 Close-out Procedures

- A. Notify The Engineer when Work is considered ready for Substantial Completion.
- B. Comply with The Engineer instructions to correct items of work listed in executed Certificates of Substantial Completion.
- C. Notify The Engineer when Work is considered finally complete.
- D. Comply with The Engineer instructions for completion of items of Work determined by The Engineer's final inspection.

END OF SECTION

SECTION 01049
MECHANICAL AND ELECTRICAL COORDINATOR

PART 1 GENERAL

1.1 Section Includes

- A. Mechanical and electrical coordinator.
- B. Submittals.
- C. Coordination required.
- D. Coordination documents.
- E. Coordination of submittals.
- F. Coordination of substitutions and modifications.
- G. Observation of Work.
- H. Documentation.
- I. Inspection and acceptance of equipment.

1.2 Related Sections

- A. Section 01010 - Summary of Work.
- B. Section 01039 - Coordination and Meetings.
- C. Section 01041 - Project Coordination.
- D. Section 01310 - Progress Schedules.
- E. Section 01340 - Submittals: Shop drawings, product data, and samples.
- F. Section 01600 - Material and Equipment.
- G. Section 01700 - Contract Closeout.

1.3 Mechanical And Electrical Work Coordinator.

- A. The Contractor shall employ and pay for services of a firm, technically qualified and administratively experienced in field coordination for the type of mechanical and electrical work required for this stage, for the duration of the Work.

1.4 Submittals For Review

- A. Submit name, address, and telephone number of Coordinator to Employer, for review.
- B. Submit coordination schedules prior to submitting, product data, and samples.

1.5 Coordination Required

- A. Coordinate progress schedules, including dates for submittals and for delivery of Products.
- B. Conduct meetings among Subcontractors and/or separate contractors and others concerned with the Work, to establish and maintain coordination and schedules, and to resolve coordination matters in dispute.
- C. Participate in progress meetings. Report on progress of Work to be adjusted under coordination requirements, and any required changes in schedules. Transmit minutes of meetings and reports to concerned parties.

1.6 Coordination Of Submittals

- A. Review, Product Data, and Samples for compliance with Contract Documents and for coordination with work of the Project Manual. Transmit for review, copy reviewed documents to the Engineer.
- B. Check field dimensions and clearances and relationship to available space and anchors.
- C. Check compatibility with work of other sections, electrical characteristics, and operational control requirements.
- D. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
- E. Coordinate wiring and control diagrams.
- F. Review the effect of any changes on work of other sections.

1.7 Coordination of Substitutions and Modifications

- A. Review proposals and requests from contractors.
- B. Verify compliance with Contract Documents and for compatibility with Work and Products of other sections.
- C. Submit with recommendation for action.

1.8 Observation Of Work

- A. Observe Work for compliance with Contract Documents.
- B. Maintain a list of observed deficiencies and defects; promptly submit.

END OF SECTION

**SECTION 01050
FIELD ENGINEERING****PART 1 - GENERAL****1.01 Requirements Included**

- A. Provide and pay for field engineering services required for Project.
 - 1. Survey work required in execution of Project.
 - 2. Civil, structural or other professional engineering services specified, or required to execute Contractor's construction methods.

- B. The Contractor shall be responsible identifying existing control points and property line corner stakes indicated on the drawings as required, including handing over to the Engineer.

1.02 Related Requirements

- A. Conditions of the Contract
- B. Section 01010: Summary of Work.
- C. Section 01720: Project Record Documents.

1.03 Qualifications of Surveyor or Engineer

- A. Qualified Engineer or registered land surveyor, acceptable to the Engineer.
- B. Registered professional Engineer of the discipline required for the specific service on the Project, licensed in Jordan or equal qualification.

1.04 Survey Reference Points

- A. Existing basic horizontal and vertical control points for the Project are those designated on drawings.

1.04 Survey Reference Points (Cont'd)

- B. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
 - 1. Make no changes or relocations without prior written notice to the Engineer.
 - 2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - 3. Require surveyor to replace project control points, which may be lost or destroyed.
 - a. Establish replacements based on original survey control.

1.05 Project Survey Requirements

- A. Establish a minimum of eight permanent bench marks on or around the site, referenced to data established by survey control points.
 - 1. Record locations, with horizontal and vertical data.
- B. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:
 - 1. Site improvements.
 - a. Stakes for grading, fill and topsoil placement.
 - b. Utility slopes and invert elevations.
 - 2. Batter boards for structures.
 - 3. Building foundation, column locations and floor levels.
 - 4. Controlling lines and levels required for mechanical and electrical trades.
- C. From time to time, verify layouts by same methods.

1.06 Records

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. On completion of all the work, prepare a certified survey showing all dimensions, locations, angles, etc.

1.07 Submittals

- A. Submit name and address of Surveyor to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by registered Engineer or surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

END OF SECTION

**SECTION 01090
REFERENCE STANDARDS****PART 1 GENERAL****1.01 Requirements Included**

- A. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.02 Quality Assurance

- A. *Application:* When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.
- B. *Publication Date:* The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

1.03 Abbreviations, Names, And Addresses Of Organizations

AA	Aluminum Association 818 Connecticut Avenue, N.W. Washington, DC 20006
AABC	Associated Air Balance Council 1000 Vermont Avenue, N.W. Washington, DC 20005
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W. Washington, DC 20001
ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219
ADC	Air Diffusion Council 435 North Michigan Avenue Chicago, IL 60611

1.03 Abbreviations, Names, And Addresses Of Organizations (cont'd)

AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, DC 20036
AMCA	Air Movement and Control Association 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
ARI	Air-Conditioning and Refrigeration Institute 1815 North Fort Myer Drive Arlington, VA 22209
ASHRAE	American Society of Heating, Refrigerating and Conditioning Engineers 345 East 47th Street New York, NY 10017
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017
ASPA	American Sod Producers Association Association Building Ninth and Minnesota Hastings, NE 68901
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235

1.03 Abbreviations, Names, And Addresses Of Organizations (cont'd)

AWI	Architectural Woodwork Institute 2310 South Walter Reed Drive Arlington, VA 22206
AWPA	American Wood-Preservers' Association 7735 Old Georgetown Road Bethesda, MD 20014
AWS	American Welding Society 2501 NW 7th Street Miami, FL 33125
BSI	British Standards Institution 2 Park Street London W1A 2BS
CDA	Copper Development Association 57th Floor, Chrysler Building 405 Lexington Avenue New York, NY 10017
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601
FM	Factory Mutual System 1151 Boston-Providence Turnpike Norwood, MA 02062
FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407
GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
JIS	Japanese Standards Association 1-3-1, Kasumigaseki Chiyoda-ku, Tokyo
MFMA	Maple Flooring Manufacturers Association 2400 East Devon, Suite 205 Des Plaines, IL 60018

1.03 Abbreviations, Names, And Addresses Of Organizations (cont'd)

MIL Military Specification
Naval Publications and Forms Center

5801 Tabor Avenue

Philadelphia, PA 19120

NAAMM National Association of Architectural Metal
Manufacturers
221 North LaSalle Street
Chicago, IL 60601

NEBB National Environmental Balancing Bureau
8224 Old Courthouse Road
Vienna, VA 22180

NEMA National Electrical Manufacturers' Association
2101 L Street, N.W.
Washington, DC 20037

NFPA National Fire Protection Association
470 Atlantic Avenue
Boston, MA 02210

NFPA National Forest Products Association
1619 Massachusetts Avenue, N.W.
Washington, DC 20036

NSWMA National Solid Wastes Management Association
1120 Connecticut Avenue, N.W.
Washington, DC 20036

NTMA National Terrazzo and Mosaic Association
3166 Des Plaines Avenue
Des Plaines, IL 60018

PCA Portland Cement Association
5420 Old Orchard Road
Skokie, IL 20076

PS Product Standard
U.S. Department of Commerce
Washington, DC 20203

SDI Steel Deck Institute
Box 3812
St. Louis, MO 63122

1.03 Abbreviations, Names, And Addresses Of Organizations (cont'd)

SDI	Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturers Association 111 East Wacker Drive Chicago, IL 60601
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association 8224 Old Court House Road Vienna, VA 22180
TAS	Technical Aid Series Construction Specifications Institute 1150 Seventeenth Street, N.W. Washington, DC 20036
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062

END OF SECTION

**SECTION 01100
ALTERNATES**

PART 1 GENERAL

1.01 Requirements Included

- A. Identification and description of Alternate work.

1.02 Related Requirements

- A. Contract Documents.
- B. Sections of Specifications identified in each Alternate.

1.03 Procedures

- A. Alternates will be exercised at the option of Employer and/or the Engineer.
- B. Coordinate related work and modify surrounding work as required to complete the Work, including changes under each Alternate, when acceptance is designated in Employer-Contractor Agreement.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used.

END OF SECTION

**SECTION 01200
PROJECT MEETINGS****PART 1 GENERAL****1.01 Requirements Included**

- A. The Engineer shall schedule and administer pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the work.
 - 1. Prepare agenda for meetings.
 - 2. Distribute written notice of each meeting four days in advance of meeting date.
 - 3. Make physical arrangements for meetings.
 - 4. Preside at meetings.
 - 5. Record the minutes; include significant proceedings and decisions.
 - 6. Reproduce and distribute copies of minutes within three days after each meeting.
 - a. To participants in the meeting.
 - b. To parties affected by decisions made at the meeting.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The Engineer shall ascertain that Work is expedited consistent with Contract Documents and construction schedules.

1.02 Related Requirements

- A. Section 01340: Shop Drawings, Product Data and Samples.
- B. Section 01720: Project Record Documents.

1.03 Pre-Construction Meeting

- A. Schedule within 15 days after date of Notice to Proceed.
- B. Location: A central site, convenient for all parties, designated by the Contractor.
- C. Attendance:
 - 1. Employer's Representative.
 - 2. The Engineer.
 - 3. Resident Project Representative.
 - 4. Contractor's Superintendent.
 - 5. Major Subcontractors.
 - 6. Major suppliers.
 - 7. Others as Appropriate.
- D. Suggested Agenda:
 - 1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers.
 - b. Projected Construction Schedules.
 - c. List of Contractor's personnel with areas of responsibility.
 - 2. Critical work sequencing.
 - 3. Major equipment/materials deliveries and priorities.
 - 4. Project Coordination.
 - a. Designation of responsible personnel.
 - 5. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals.
 - d. Change Orders.
 - e. Applications for Payment.

1.03 Pre-Construction Meeting (Cont'd)**D. Suggested Agenda: (Cont'd)**

6. Adequacy of distribution of Contract Documents.
7. Procedures for maintaining Record Documents.
8. Use of premises:
 - a. Office, work and storage areas, pending adequacy of the Site.
 - b. Employer's requirements.
9. Construction facilities, controls and construction aids.
10. Temporary utilities.
11. Safety and first-aid procedures.
12. Security procedures.
13. Housekeeping procedures.

1.04 Progress Meetings

- A. Schedule regular periodic meetings, as required.
- B. Hold called meetings as required by progress of the work.
- C. Location of the meetings: Project field office of Contractor.
- D. Attendance:
 1. The Engineer, and his professional consultants as needed.
 2. Subcontractors as appropriate to the agenda.
 3. Suppliers as appropriate to the agenda.
 4. Others.

1.04 Progress Meetings (Cont'd)**E. Suggested Agenda**

1. Review, approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, and conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Progress, schedule, during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the Project.
14. Other business.

END OF SECTION

**SECTION 01300
SUBMITTALS**

PART 1 GENERAL

1.1 Section Includes

- A. Submittal procedures.
- B. Proposed Products list.
- C. Shop Drawings.
- D. Product Data.
- E. Samples.
- F. Manufacturer's installation instructions.
- G. Manufacturers' certificates.
- H. Construction photographs.

1.2 Related Sections

- A. Section 01400 - Quality Control.
- B. Section 01700 - Contract Close-out.

1.3 Submittal Procedures

- A. Transmit each submittal with Form to the Engineer under an accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

1.3 Submittal Procedures (Cont'd)

- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver to the Engineer at Site Office. Coordinate submission of related items.
- F. For each submittal for review, allow 15 days excluding delivery time to and from the contractor.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and the Engineer review stamps.
- I. Revise and resubmit, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.
- K. Submittals not requested will not be recognized or processed.

1.4 Proposed Products List

- A. Within 15 days after date of Employer-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment. and appliances.

1.5 Shop Drawings

- A. Submit in the form of one reproducible and the number of opaque reproductions which Contractor requires, plus two copies which will be retained by the Engineer.
- B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 - CONTRACT CLOSE-OUT.

1.5 Shop Drawings (Cont'd)

- C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.6 Product Data

- A. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Engineer.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.
- C. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 - CONTRACT CLOSE-OUT.

1.7 Samples

- A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for the Engineer selection.
- C. Include identification on each sample, with full Project information.
- D. Submit the number of samples specified in individual specification sections; one of which will be retained by the Engineer.
- E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

1.8 Manufacturer Installation Instructions

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to the Engineer in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.9 Manufacturer Certificates

- A. When specified in individual specification sections, submit certification by manufacturer to the Engineer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

**SECTION 01310
PROGRESS SCHEDULES****PART 1 GENERAL****1.1 Section Includes**

- A. Format.
- B. Content.
- C. Revisions to schedules.
- D. Submittals.

1.2 Related Sections

- A. Section 01010 - Summary of Work.
- B. Section 01300 - Submittals.

1.3 Format

- A. Prepare Bar Chart method for construction operations.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Minimum 560 x 432 mm or [Multiples of 8-1/2 x 11 inches].

1.4 Content

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification section number.
- C. Identify work of separate stages and/or separate floors and other logically grouped activities.
- D. Provide sub-schedules for each stage of Work identified in Section 01010.

1.4 Content (Cont'd)

- E. Provide sub-schedules to define critical portions of the entire schedule.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- G. Provide separate schedule of submittal dates for shop drawings, product data, and samples, including dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.

1.5 Revisions to Schedules

- A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
- B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- C. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

1.6 Submittals

- A. Submit preliminary outline Schedules within 15 days after date of Employer-Contractor Agreement for coordination with work of separate contracts. After review, submit detailed schedules within 15 days modified to accommodate revisions recommended by the Engineer.
- B. Submit revised Progress Schedules with each Application for Payment.
- C. Submit two opaque reproduction and one reproducible transparency to the Engineer.

1.7 Distribution

- A. Distribute copies of reviewed schedules to Project site file, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.8 Reports

A. Daily Report

The contractor shall submit a daily report in writing to the Engineer in an agreed form giving daily records of the following items:

- Number of men employed on the site divided into staff tradesmen and others.
- Accidents to employees.
- Weather condition of each day and night.
- Progress of the works in general terms.
- Plant on site.
- Materials on site.

B. Monthly Report

The contractor shall submit to the Engineer each month a report comprising the following:-

- Progress chart.
- Progress photographs (as described elsewhere).
- Statement regarding the progress of the works.
- Extent and nature of the work completed.
- Any problems relating to the works (with adequate documentation if applicable).
- Financial statement.
- Record of materials, equipment and plant tested with test results.
- Detailed schedule of work to be performed during the coming months and a general testing of work to be performed during the coming three months.
- The contents and format of all reports shall be subject to the approved of the Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01340
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 GENERAL**1.01 Requirements Included**

- A. Submit Shop Drawings, Product Data and Samples required by Contract Documents.

1.02 Related Requirements

- A. Definitions, and Additional Responsibilities of Parties: Conditions of the Contract.
- B. Section 01720: Project Record Documents.
- C. Designate in the construction schedule, or in a separate coordinated schedule, the dates for submission and the dates that reviewed Shop Drawings, Product Data and Samples will be needed.

1.03 Shop Drawings

- A. Drawings shall be presented in a clear and thorough manner.
 - 1. Details shall be identified by reference to sheet and detail, schedule or room numbers shown on Contract Drawings.

1.04 Product Data

- A. Preparation:
 - 1. Clearly mark each copy to identify pertinent products or models.
 - 2. Show performance characteristics and capacities.
 - 3. Show dimensions and clearances required.
 - 4. Coordinate with Electro-Mechanical contractor wiring or piping diagrams and controls.

1.04 Product Data (Cont'd)

- B. Manufacturer's standard schematic drawings and diagrams:
 - 1. Modify drawings and diagrams to delete information which is not applicable to the Work.
 - 2. Supplement standard information to provide information specifically applicable to the Work.

1.05 Samples

- A. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of the product, with integrally related parts and attachment devices.
 - 2. Full range of color, texture and pattern.
- B. Field samples and mock-ups:
 - 1. Contractor shall erect, at the Project site, at a location acceptable to the Engineer
 - 2. Size or area: that specified in the respective specification section.
 - 3. Fabricate each sample and mockup complete and finished.
 - 4. Remove mock-ups at conclusion of Work or when acceptable to the Engineer.

1.06 Contractor Responsibilities

- A. Review Shop Drawings, Product Data and Samples prior to submission.
- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with specifications.

1.06 Contractor Responsibilities (Cont'd)

- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
- E. Begin no fabrication or work which requires submittals until return of submittals with the Engineer approval.

1.07 Submission Requirements

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.
- B. Number of submittals required:
 - 1. All in accordance with Contract Documents.
- C. Submittals shall contain:
 - 1. All in accordance with Contract Documents.

1.08 Resubmission Requirements

- A. Make any corrections or changes in the submittals required by the Supervising Engineer and resubmit until approved.
- B. Shop Drawings and Product Data:
 - 1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
 - 2. Indicate any changes which have been made other than those requested by the Engineer.
- C. Samples: Submit new samples as required for initial submittal.

1.09 Distribution

- A. Distribute reproductions of Shop Drawings and copies of Product Data which carry the Engineer stamp of approval to:
 - 1. Job site file.
 - 2. Record Documents file.
 - 3. Other affected contractors.
 - 4. Subcontractors.
 - 5. Supplier or Fabricator.
 - 6. As directed by the Engineer.

- B. Distribute samples which carry the Engineer stamp of approval as directed by the Engineer.

1.10 Engineer Duties

- A. Review submittals with reasonable promptness and in accordance with schedule.
- B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or approval of submittal.
- C. Return submittals to Contractor for distribution, or for resubmission.

END OF SECTION

**SECTION 01380
CONSTRUCTION PHOTOGRAPHS****PART 1 GENERAL****1.01 Requirements Included**

- A. Employ competent photographer to take construction record photographs periodically during course of the Work.

1.02 Related Requirements

- A. Section 01010: Summary of Work.
- B. Section 01720: Project Record Documents.

1.03 Photography Required

- A. Provide photographs taken on cutoff date for each scheduled Application for Payment.
- B. Provide the Engineer with photographs taken on cut off date for monthly report (number of prints will be as required).
- C. Provide photographs taken at each major stage of construction:
 - 1. Completion of site clearing.
 - 2. Completion of excavations.
 - 3. Completion of structural works.
 - 4. Completion of external works.
 - 5. Completion of Architectural works.
 - 6. Completion of Mechanical works.
 - 7. Completion of Electrical works.

1.04 Costs Of Photography

- A. Pay costs for specified photography and prints.

PART 2 PRODUCTS

2.01 Prints

- A. Coloured:
 - 1. Paper: Single weight, Neutral black image tone, and white base.
 - 2. Finish: Smooth surface, glossy.

- B. Identify each print on back, listing:
 - 1. Name of Project.
 - 2. Orientation of view.
 - 3. Date and time of exposure.
 - 4. Name and address of photographer.
 - 5. Photographer's numbered identification of exposure.

PART 3 EXECUTION

3.01 Technique

- A. Factual presentation.

- B. Correct exposure and focus.
 - 1. High resolution and sharpness.
 - 2. Maximum depth-of-field.
 - 3. Minimum distortion.

3.02 Views Required

- A. Photograph from locations to adequately illustrate condition of construction and state of progress.
 - 1. At successive periods of photography, take at least one photograph from the same overall view as previously.
 - 2. Consult with the Engineer at each period of photography for instructions concerning views required.

3.03 Delivery of Prints

- A. Deliver prints to the Engineer to accompany each Application for Payment.
- B. Deliver prints as soon as processed, one set each to:
 - 1. Employer.
 - 2. The Engineer.
 - 3. Project Record File.

END OF SECTION

**SECTION 01400
QUALITY CONTROL**

PART 1 GENERAL

1.01 Requirements Included

- A. General Quality Control.
- B. Manufacturers' Field Services.

1.02 Related Requirements

- A. Conditions of the Contract: Inspection and testing required by governing authorities.

1.03 Quality Control, General

- A. Maintain quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce work of specified quality.

1.04 Manufacturers' Field Services

- A. When specified in respective Specification sections, require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to the Engineer listing observations and recommendations.

END OF SECTION

SECTION 01410
TESTING LABORATORY SERVICES**PART 1 GENERAL****1.01 Requirements Included**

- A. Contractor shall employ and pay for the services of an Independent Testing Laboratory to perform specific services and testing.

1.02 Related Requirements

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Related Requirements Specified in Other Sections.
- C. Respective sections of specifications: Certification of products.
- D. Each specification section listed: Laboratory tests required, and standards for testing.
- E. Testing Laboratory inspection, sampling and testing is required as elsewhere indicated in Contract Documents.

1.03 Qualification Of Laboratory

- A. Meet basic requirements of the Local Authorities General Specifications.
- B. Authorized to operate in Jordan.
- C. Testing Equipment:
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.

1.04 Laboratory Duties

- A. Cooperate with the Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify the Engineer and the Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit five copies of written report of each test and inspection to the Engineer. Each report shall include:
 - 1. Date of test.
 - 2. Project title and number.
 - 3. Testing laboratory name, address and telephone number.
 - 4. Name and signature of laboratory inspector.
 - 5. Date and time of sampling or inspection.
 - 6. Record of temperature and weather conditions.
 - 7. Identification of product and specification section.
 - 8. Location of sample or test in the Project.
 - 9. Type of inspection or test.
 - 10. Results of tests and compliance with Contract Documents.
 - 11. Interpretation of test results, when requested by the Engineer.
- E. Perform additional tests as required by the Engineer or the Employer.

1.05 Limitations Of Authority Of Testing Laboratory

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 - 2. Approve or accept any portion of the Work.
 - 3. Perform any duties of the Contractor.

1.06 Contractor's Responsibilities

- A. Cooperate with laboratory personnel, provide access to Work, to Manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- D. Furnish copies of Products test reports as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at the Project site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse Employer for laboratory personnel and travel expenses incurred due to Contractor's negligence.

1.06 Contractor's Responsibilities (Cont'd)

- G. Employ and pay for the services of a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required:
 - 1. For the Contractor's convenience.
 - 2. When initial tests indicate Work does not comply with Contract Documents.

- H. Make arrangements with laboratory and pay for additional samples and tests required for Contractor's convenience.

END OF SECTION

**SECTION 01500
CONSTRUCTION FACILITIES AND
TEMPORARY CONTROLS**

PART 1 GENERAL

1.01 Requirements Included

- A. Electricity, Lighting.
- B. Heat, Ventilation.
- C. Telephone Service.
- D. Water.
- E. Sanitary Facilities.
- F. Construction Aid.
- G. Temporary Roofing.
- H. Enclosures.
- I. Barriers.
- J. Cleaning During Construction.
- K. Project Identification.
- L. Field Offices and Sheds.

1.02 Related Requirements

- A. Section 01010 - Summary of Work
- B. Section 01700 - Contract Close-out

1.03 Electricity, Lighting

- A. Provide service required for construction operations, with branch wiring and distribution boxes located to allow service and lighting by means of construction type power cords.
- B. Provide lighting for construction operations.

1.04 Heat, Ventilation

- A. Provide as required to maintain specified conditions for construction operations, to protect materials and finishes from damage due to temperature or humidity.
- B. Provide ventilation of enclosed areas to cure materials, to disperse humidity, and to prevent accumulations of dust, fumes, vapors, or gases.

1.05 Telephone Service

- A. Provide telephone service to field offices.

1.06 Water

- A. Provide service required for construction operations. Extend branch piping with outlets located so that water is available by use of hoses.

1.07 Sanitary Facilities

- A. Provide and maintain required facilities and enclosures.

1.08 Construction Aid

- A. Provide construction aid and equipment required by personnel and to facilitate execution of the Work: Scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes and other such facilities and equipment.
 - 1. Refer to respective sections for particular requirements for each trade.
- B. Provide adequate first aid facilities on site.

1.09 Enclosures

- A. Provide temporary weather-tight closures of openings in exterior surfaces to provide acceptable working conditions and protection for materials, to allow for temporary heating, and to prevent entry of unauthorized persons. Provide doors with self-closing hardware and locks.

1.10 Barriers

- A. Provide as required to prevent public entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

1.11 Cleaning During Construction

- A. Control accumulation of waste materials and rubbish; periodically dispose of off-site.
- B. Clean interior areas prior to start of finish work, maintain areas free of dust and other contaminants during finishing operations.

1.12 Project Identification

- A. Provide Project identification sign of steel frame construction, painted, with exhibit lettering by professional sign painter, to the Engineer's design and colors. List title of Project, names of Employer, Engineer, and Contractor.
- B. Erect on site at location established by the Engineer.
- C. Allow no other signs to be displayed.

1.13 Field Offices and Sheds

- A. Provide approved furnished field offices for the Engineer's staff.

1.14 Removal

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary facilities. Remove underground installations; grade site as indicated. Restore existing facilities used during construction to specified, or to original, condition.

END OF SECTION

**SECTION 01540
SECURITY**

PART 1 GENERAL

1.01 Requirements Included

- A. Provide a project security program, to:
 - 1. Protect Work, stored products and construction equipment from theft and vandalism.
 - 2. Protect premises from entry by unauthorized persons.

1.02 Related Requirements

- A. Section 01200: Project Meetings.
- B. Section 01500: Construction Facilities and Temporary Controls.

1.03 Maintenance Of Security

- A. Initiate security program promptly after job mobilization, when enclosure fence and gates are installed.
- B. Maintain security program throughout construction period, until Employer occupancy or Employer acceptance precludes the need for Contractor security.

1.04 Guard Service

- A. Employ a recognized guard service to provide a watchman service, which shall be in effect:
 - 1. At all times day or night when general construction work is not in progress.

END OF SECTION

**SECTION 01600
MATERIAL AND PLANT****PART 1 GENERAL****1.01 Requirements Included**

- A. Products.
- B. Workmanship.
- C. Manufacturers' Instructions.
- D. Transportation and Handling.
- E. Storage and Protection.

1.02 Related Requirements

- A. Section 01010 - Summary of Work.
- B. Section 01700 - Contract Close-out.

1.03 Products

- A. Products include material, plant, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.

1.04 Workmanship

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.05 Manufacturers' Instructions

- A. When work is specified to comply with manufacturers' instructions, submit copies as specified in Conditions of Contract, distribute copies to persons involved, and maintain one set in field office.
- B. Perform work in accordance with details of instructions and specified requirements. Should a conflict exist between Specifications and instructions, consult with the Engineer.

1.06 Transportation And Handling

- A. Transport Products by methods to avoid Product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide construction equipment and personnel to handle Products by methods to prevent soiling or damage.
- C. Promptly inspect shipments to assure that Products comply with requirements, quantities are correct, and Products are undamaged.

1.07 Storage And Protection

- A. Store Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive Products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- B. For exterior storage of fabricated Products, place on sloped supports above ground. Cover Products subject to deterioration with impervious sheet covering; provide ventilation to avoid condensation.
- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure Products are undamaged, and are maintained under required conditions.
- E. After installation, provide coverings to protect Products from damage from traffic and construction operations, remove when no longer needed.

END OF SECTION

SECTION 01630
SUBSTITUTIONS AND PRODUCT OPTIONS**PART 1 GENERAL****1.01 Requirements Included**

- A. Furnish and install Products specified, under options and conditions for substitutions stated in this Section.

1.02 Related Requirements

- A. Section 01400: Quality Control.
- B. Section 01720: Project Record Documents.

1.03 Products List

- A. Within 30 days after award of Contract, submit to the Engineer five copies of complete list of major products which are proposed for installation.
- B. Tabulate Products by specification section number and title.
- C. For products specified only by reference standards, list for each such Product:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalog designation.
 - 4. Manufacturer's data:
 - a. Reference standards.
 - b. Performance test data.

1.04 Contractor's Options

- A. For Products specified only by reference standard, select Product meeting that standard, by any manufacturer.
- B. For Products specified by naming several Products or manufacturers, select any one of products and manufacturers named which complies with Specifications.

1.05 Substitutions

- A. Within a period of 30 days after award of Contract, the Engineer will consider formal requests from the Contractor for substitution of Products in place of those specified.
 - 1. After end of that period, requests will be considered only in case of Product unavailability or other conditions beyond the control of Contractor.
- B. Submit separate request for each substitution. Support each request with:
 - 1. Complete data substantiating compliance of proposed substitution with requirements stated in Contract Documents:
 - a. Product identification, including manufacturer's name and address.
 - b. Manufacturer's literature; identify.
 - 1) Product description.
 - 2) Reference standards.
 - 3) Performance and test data.
 - c. Samples, as applicable.
 - d. Name and address of similar projects on which product has been used, and date of each installation.
 - 2. Itemized comparison of the proposed substitution with product specified; List significant variations.
 - 3. Data relating to changes in construction schedule.
 - 4. Any effect of substitution on separate contracts.
 - 5. List of changes required in other work or Products.
 - 6. Accurate cost data comparing proposed substitution with product specified.
 - a. Amount of any net change to Contract Sum.

1.05 Substitutions (Cont'd)

7. Designation of required license fees or royalties.
 8. Designation of availability of maintenance services, sources of replacement materials.
- C. Substitutions will not be considered for acceptance when:
1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor.
 2. They are requested directly by a subcontractor or supplier.
 3. Acceptance will require substantial revision of Contract Documents.
- D. Substitute products shall not be ordered or installed without written acceptance of the Engineer.
- E. The Engineer will determine acceptability of proposed substitutions.

1.06 Contractor's Representation

- A. In making formal request for substitution Contractor represents that:
1. He has investigated proposed product and has determined that it is equal to or superior in all respects to that specified.
 2. He will provide same warranties or bonds for substitution as for product specified.
 3. He will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
 4. He waives claims for additional costs caused by substitution which may subsequently become apparent.
 5. Cost data is complete and includes related costs under his Contract, but not:
 - a. Costs under separate contracts.
 - b. The Engineer's costs for redesign or revision of Contract Documents.

1.07 Engineer Duties

- A. Review Contractor's requests for substitutions with reasonable promptness.
- B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

END OF SECTION

**SECTION 01700
CONTRACT CLOSE-OUT****PART 1 GENERAL****1.01 Requirements Included**

- A. Close-out Procedures.
- B. Final Cleaning.
- C. Systems Demonstration
- D. Warranties and Bonds

1.02 Related Requirements

- A. Conditions of the Contract.
- B. Section 01500 - Construction Facilities and Temporary Controls.

1.03 Close-out Procedures

- A. Comply with procedures stated in General Conditions of the Contract for issuance of Certificate of Substantial Completion.
- B. When Contractor considers Work has reached final completion, submit written certification that Contract Documents have been reviewed, work has been inspected, and that Work is complete in accordance with Contract Documents and ready for the Engineer's inspection.
- C. In addition to submittals required by the conditions of the Contract, provide submittals required by governing authorities, and submit a final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
- D. The Engineer will issue a final change order reflecting approved adjustments to Contract Sum not previously made by Variation Order.

1.04 Final Cleaning

- A. Execute prior to final inspection.
- B. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Owner will provide final cleaning after final acceptance.

1.05 Operation and Maintenance Data

- A. Provide data as required by Contract Documents.
 - 1. Any data as required by Contract Documents.

1.06 Systems Demonstration

- A. Prior to final inspection, demonstrate operation of each system to the Engineer and Employer.

1.07 Warranties and Bonds

- A. Provide duplicate, notarized copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- B. Submit material prior to final application for payment. For equipment put into use with Employer's permission during construction, submit within 10 days after first operation. For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

END OF SECTION

**SECTION 01710
CLEANING**

PART 1 GENERAL

1.01 Requirements Included

- A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

1.02 Related Requirements

- A. Conditions of the Contract.
- B. Each Specification Section: Cleaning for specific Products or work.

1.03 Disposal Requirements

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

2.01 Materials

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION**3.01 During Construction**

- A. Execute periodic cleaning to keep the Work and the site free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations and/or demolition works.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 Dust Control

- A. Clean interior spaces and continue cleaning on an as-needed basis to the satisfaction of the Engineer.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on already cleaned surfaces.

3.03 Final Cleaning

- A. Broom clean exterior surfaces; rake clean other surfaces of the grounds.
- B. Prior to final completion, or Employer occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean.

END OF SECTION

**SECTION 01720
PROJECT RECORD DOCUMENTS**

PART 1 GENERAL

1.01 Requirements Included

- A. Maintain at the site for the Employer one record copy of:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Engineer Field Orders or written instructions.
 - 6. Approved Shop Drawings, Product Data and Samples.
 - 7. Field Test records.
 - 8. Construction photographs.

- B. As-Built Drawings.

1.02 Related Requirements

- A. Conditions of Contract.
- B. Section 01340: Shop Drawings, Product Data and Samples.
- C. Section 01380: Construction Photographs.

1.03 Maintenance Of Documents And Samples

- A. Store documents and samples in Contractor's field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinet or secure storage space for storage of samples.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents and samples available at all times for inspection by the Engineer.
- E. Materials

The materials required for maintenance to be submitted after Provisional Acceptance of the work.

- 1. Shop drawings for all the work to be submitted.
- 2. As-built drawings/documentation shall be submitted as follows:-
 - i. One polyester copy and 6 paper copies of each drawing fully checked and approved by the Consultant.
 - ii. Diskettes of all drawings/documentation.
- 3. Three sets each of any other documents required.

1.04 Marking Devices

- A. Provide felt tip marking pens for recording information in the color code designated by the Engineer.

1.05 Recording

- A. Label each document "PROJECT RECORD" in neat large printed letters.
- B. Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
- C. Drawings; Legibly mark to record actual construction:
 - 1. Depths of various elements of foundation in relation to finish first floor datum.
 - 2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by Field Order or by Variation Order.
 - 6. Details not on original contract drawings.
- D. Specifications and Addenda; Legibly mark each Section to record:
 - 1. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.
 - 2. Changes made by Field Order or by Variation Order.
- E. Refer to attachment to this Section of Specifications for general guidelines in preparation of record documents.

1.06 Submittal

- A. At Contract close-out, deliver Record Documents to the Engineer and for the Employer.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. Title and number of each Record Document.
 - 5. Signature of Contractor or his authorized representative.

END OF SECTION

**SECTION 01730
OPERATING AND MAINTENANCE DATA****PART 1 GENERAL****1.01 Requirements Included**

- A. Compile product data and related information appropriate for Employer's maintenance and operation of products furnished under Contract.
 - 1. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specification.
- B. Instruct Employer's personnel in maintenance of products and in operation of plant and systems.

1.02 Related Requirements

- A. Section 01340: Shop Drawings, Product Data & Samples.
- B. Section 01700: Contract Close-out.
- C. Section 01720: Project Record Documents and attachment.

1.03 Quality Assurance

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of described products.
 - 2. Familiar with requirements of this Section.
 - 3. Skilled as technical writer to the extent required to communicate essential data.
 - 4. Skilled as draftsman competent to prepare required drawings.

1.04 Form Of Submittals

- A. Prepare data in form of an instructional manual for use by Employer's personnel all in accordance with Conditions of Contract.

1.05 Content Of Manual

- A. Neatly typewritten table of contents for each volume, arranged in systematic order.
 - 1. Contractor, name of responsible principal, address and telephone number.
 - 2. A list of each product required to be included, indexed to content of the volume.
 - 3. List, with each product, name, address and telephone number of:
 - a. Subcontractor or installer.
 - b. Maintenance contractor, as appropriate.
 - c. Identify area of responsibility of each.
 - d. Local source of supply for parts and replacement.
 - 4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

- B. Product Data:
 - 1. Include only those sheets which are pertinent to the specific product.
 - 2. Annotate each sheet to:
 - a. Clearly identify specific product or part installed.
 - b. Clearly identify data applicable to installation.
 - c. Delete references to inapplicable information.

- C. Drawings:
 - 1. Supplement product data with drawings as necessary to clearly illustrate:
 - a. Relations of component parts of plant and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 - a. Do not use Project Record Documents as maintenance drawings.

- D. Written text, as required to supplement product data for the particular installation:
 - 1. Organize in consistent format under separate headings for different procedures.
 - 2. Provide logical sequence of instructions for each procedure.

- E. Copy of each warranty and bond issued.
 - 1. Provide information sheet for Employer's personnel, give:
 - a. Proper procedures in event of failure.
 - b. Instances which might affect validity of warranties or bonds.

1.06 Manual For Materials And Finishes

- A. Submit four copies of complete manual in final form.
- B. Content; for architectural products, applied materials and finishes:
 - 1. Manufacturer's data, giving full information on products.
 - a. Catalog number, size, composition.
 - b. Color and texture designations.
 - c. Information required for re-ordering special- manufactured products.
 - 2. Instructions for care and maintenance.
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods which are detrimental to product.
 - c. Recommended schedule for cleaning and maintenance.
- C. Content, for moisture-protection and weather-exposed products:
 - 1. Manufacturer's data, giving full information on products.
 - a. Applicable standards.
 - b. Chemical composition.
 - c. Details of installation.
 - 2. Instructions for inspection, maintenance, and repair.
- D. Additional requirements for maintenance data: Respective sections of Specifications.

1.07 Manual For Equipment And Systems

- A. Submit four copies of complete manual in final form.
- B. Content, for each unit of equipment and system, as appropriate:
 - 1. Description of unit and component parts.

- a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.
2. Operating procedures:
 - a. Start-up, break-in, routine and normal operating instructions.
 - b. Regulation, control, stopping, shut-down and emergency instructions.
 - c. Summer and winter operating instructions.
 - d. Special operating instructions.
 3. Maintenance Procedures:
 - a. Routine operations.
 - b. Guide to "Trouble-shooting".
 - c. Disassembly, repair and re-assembly.
 - d. Alignment, adjusting and checking.
 4. Servicing and lubrication schedule.
 - a. List of lubricants required.
 5. Manufacturer's printed operating and maintenance instructions.
 6. Description of sequence of operation by control manufacturer.
 7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - a. Predicted life of parts subject to wear.
 - b. Items recommended to be stocked as spare parts.
 8. As-installed control diagrams by controls manufacturer.
 9. Each contractor's coordination drawings.
 - a. As-installed color coded piping diagrams.
 10. Charts of valve tag numbers, with location and function of each valve.
 11. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 12. Other data as required under pertinent sections of specifications.
- C. Content, for each electric and electronic system, as appropriate:
1. Description of system and component parts.
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data and tests.
 - c. Complete nomenclature and commercial number of replaceable parts.

2. Circuit directories of panel boards.
 - a. Electrical service.
 - b. Controls.
 - c. Communications.
 3. As-installed color coded wiring diagrams.
 4. Operating procedures:
 - a. Routine and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 5. Maintenance procedures:
 - a. Routine operations.
 - b. Guide to "trouble-shooting".
 - c. Disassembly, repair and re-assembly.
 - d. Adjustment and checking.
 6. Manufacturer's printed operating and maintenance instructions.
 7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 8. Other data as required under pertinent sections of specifications.
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of Employer's personnel.
- E. Additional requirements for operating and maintenance data: Respective sections of Specifications.

1.08 Submittal Schedule

- A. Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of work.
1. The Supervising Engineer/ Employer's Representative will review draft and return one copy with comments.
- B. Submit one copy of completed data in final form fifteen days prior to final inspection or acceptance.
1. Copy will be returned after final inspection or acceptance, with comments.

- C. Submit specified number of copies of approved data in final form 10 days after final inspection or acceptance.

1.09 Instruction Of Owner's Personnel

- A. Prior to final inspection or acceptance, fully instruct Employer's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.
- B. Operating and maintenance manual shall constitute the basis of instruction.
 - 1. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.

END OF SECTION