

^{A16}**SECTION 01 33 00 – SUBMITTAL PROCEDURES**

1.01 SCOPE:

- A. This Section is intended to complement the Contractor's obligations stipulated in Sub-Clauses 5.2 (*Contractor's Documents*) and 7.2 (*Samples*) of the Conditions of Contract.
- B. The Contractor's Documents and samples submittal requirements are further detailed in other Sections of the Contract, and the Contractor shall comply with any additional submittal requirements specified therein. Also, unless otherwise stated herein or elsewhere in the Employer's Requirements, submittals shall be submitted and managed in accordance with this Section, Section 01 32 00 (*Project Communications and Document Management*), and Section 01 31 00 (*Project Management and Coordination*).
- C. ^{A17}(Reserved)^{A17}
- D. ^{A17}(Reserved)^{A17}

1.02 REFERENCES:

- A. **American National Standards Institute (ANSI) Standards:**
 - 134-05 Graphic Symbols for Heating, Ventilating, Air-Conditioning, and Refrigerating Systems, (ASHRAE)
 - Y32.9-72 Graphic Symbols for Electrical Wiring and Layout Diagrams Used in Architecture and Building Construction, (IEEE)
- B. **National CAD Standard Project Committee (NCSPC) / National Institute of Building Sciences (NIBS) Publication:**
 - NCS U.S. National CAD Standard for Architecture, Engineering, and Construction (NCS), NCS Version 4.0, January 2008
- C. **American Society of Mechanical Engineers (ASME) Standards:**
 - Y14.5-94 Dimensioning and Tolerancing
 - Y14.24-99(04) Types and Applications of Engineering Drawings
 - Y14.34M-96 Associated Lists
 - Y14.100-04 Engineering Drawing Practices
- D. **Construction Specifications Institute (CSI) Publication:**
 - Master Format 2004

1.03 SUBMITTALS:

- A. **Submittal Register and Submittal Sub-programme:** The submittal register as part of the submittal sub-programme, shall be submitted within 28 days of the Commencement Date, but no later than the post award conference specified in Section 01 31 00 (*Project Management and Coordination*). It shall include the Contractor's proposed identification

coding for the submittals and format of submittal. Also, it shall include fields for the Section number of the Contract and title, the submittal description and/or requirements.

- B. **Computer Aided Design and Drafting (CADD) Standards and Configurations Manual:** The Contractor shall submit a project CADD manual for approval within 28 days after the Commencement Date. Also, within 35 days after the Commencement Date, the Contractor shall submit a test sample of a CADD drawing file to ensure compatibility with the Employer's CADD system.
- C. **Intermediate Designs:** The intermediate design is the design stage in which the Contractor is able to demonstrate that his design complies with the Employer's Requirements. The Contractor shall submit intermediate designs for review or approval as called for in the relevant sections of the Employer's Requirements, in accordance with the Accepted Baseline Programme and Section 01 31 00 (*Project Management and Coordination*).^{A17} Intermediate design documents may include data, information, drawings, product specification sheets, schedules, progress charts, calculations, models, simulations, computer runs, manuals, photographs, digital videos, reports, programmes, and other similar items. The content of the intermediate design packages shall be appropriate to the subject and discipline and agreed with the Employer at the Design Kick-off Conference as defined in Section 01 31 00 (*Project Management and Coordination*).^{A17} The information shall be adequate to show that the design is proceeding in compliance with the Conditions of Contract and Employer's Requirements.
- D. **Final Designs:** The final design comprises the stage in the design process in which contract drawings and prescriptive construction specifications are detailed enough to be apt for construction purposes, i.e., ready for developing released for construction drawings.^{A17} The Contractor shall submit final designs for review in accordance with the Accepted Baseline Programme and Section 01 31 00 (*Project Management and Coordination*) and as required in the Employer's Requirements.^{A17} The final design submissions shall be complete, including but not limited to, final design drawings, specifications, supporting design data and calculations and design reports appropriate to the subject and discipline. Final design drawings and reports shall be signed and sealed by the responsible designer of record.^{A17} The Contractor shall deliver submittals in a timely manner and in accordance with the most current revision of the Accepted Baseline Programme.^{A17}
- E. **Released for Construction Drawings:**^{A17} The Contractor shall submit released for construction drawings, stamped as such, prior to construction of any associated part of the Works commencing.^{A17}
- F. **Updated As-Built Drawings:** Beginning 119 days after the Commencement Date and at intervals of every 119 days thereafter until taking-over, the Contractor shall submit an updated list of project drawings, along with an electronic copy of updated as-built drawings, revision-log entries, and updated technical specifications. At the request of the Employer's Representative, an electronic copy of the updated as-built drawings and supporting information shall be provided.
1. The Contract drawing list shall be generated in the format required herein. The Contract drawing list shall identify the drawing number, the drawing's revision/issue, the title or description of the drawing, the completion date of the

- drawing, the type of drawing (as “A-B” indicating it is an as-built drawing), and the CADD file name, if applicable.
2. The initial submittal of the project drawing list shall identify all as-built drawings programmed to be made by Contractor throughout the performance of the Works. Each subsequent submittal shall be updated to show any additional records added to the list since the previous submittal and the dates for drawing files completed since the previous submittal.
- G. **Specifications:** The Contractor’s Documents submittals shall include, notwithstanding other particulars, the submittal of prescriptive technical construction specifications, whereby the Contractor shall submit prescriptive technical construction specifications together with the intermediate and final designs (i.e., they shall accompany the Contract drawings).
- H. **Nomenclature:** The Contractor shall submit for approval, a comprehensive plan to assign nomenclature and numbering to all buildings, structures, gates, valves, lighting poles, sign poles, bollards, manholes, roads, perimeter gates, etc. This shall be submitted within 91 days of the Commencement Date. The Contractor shall identify by name and number all buildings, structures, gates, valves, lighting poles, sign poles, bollards, manholes, roads, perimeter gates, etc. for the Works. The proposed plan shall include, but not be limited to, the letter size for the name and number; the type of sign, plate, or tag (depending on the type of item to be identified); and the location. The approved nomenclature and numbering shall be used throughout the Contractor’s Documents. Once built or installed, each item shall have the corresponding identification in accordance with the approved plan.
- I. **Progress Videos and Photographs:** Progress videos and photographs shall be electronically submitted monthly as part of the Contractor’s monthly report. They shall be representative of all major elements of the work in progress during the month. All videos and photographs, including all digital media, shall become the property of the Employer. The media and typed descriptions/shot logs, shall be delivered electronically to the Employer’s Representative as part of the monthly report.

1.04 PROCEDURES:

- A. ^{A17}Each submittal that requires the review or approval of the Employer’s Representative shall be submitted to him as called for in the relevant sections of the Employer’s Requirements, as described in this Section and in Sub-Clause 5.2 (*Contractor’s Documents*) of the Conditions of Contract. ^{A17}
- B. All submittals shall be for review by the Employer’s Representative unless otherwise specifically stated that the submittal is for approval.
- C. ^{A17}**Submittal of Documents:** Unless stated otherwise, the Contractor is required for each submittal to provide two printed copies, and an electronic version via the [DTCS](#) in accordance with this section, Section 01 32 00 (*Project Communications and Document Management*) and Section 01 31 00 (*Project Management and Coordination*). At the Contractor’s discretion and depending on the nature and size of the item to be submitted, the electronic version shall either be written to a removable data storage media per Paragraph 1.05 and delivered with the hard copy or made available to designated Employer’s Personnel from the Contractor’s non-DTCS server system. In all cases, the

appropriate function of the DTCS shall be used by the Contractor to send information to notify the Employer's Personnel that the documents are available and to provide a record of the transmittal. Where samples are to be submitted, the Contractor shall comply with the procedure as described in Paragraph 1.06.^{A17}

1. ^{A17}All Contractor's Documents shall be checked by the Contractor and Subcontractors and the corresponding approval shall be indicated in the title block of shop drawings or on the face of the Contractor's Document before submitting them to the Employer's Representative for review.^{A17}
 2. All Contractor's Documents shall be produced so as to be legible when plotted to printed copy and reduced to half size.
- D. **Over-the-Shoulder Review:** The Employer shall be entitled to carry out Over-the-Shoulder Review during the design phase and there shall be a continuous review and dialogue between the Employer's Representative and the Contractor.^{A17} The Over-the-Shoulder Review process will permit the Employer's designers to be more aware of the Contractor's progress and serve to expedite the review of submittals. Refer also to Section 01 31 00 (*Project Management and Coordination*) and Section 01 40 00 (*Quality Requirements*).^{A17}
- E. **Coordination of Drawings and Programmes:** The Contractor shall coordinate and check the Contractor's Documents and programmes with all relevant trades involved before submitting them to the Employer's Representative. Such Contractor's Documents shall bear the Contractor's stamp of approval as evidence of such checking and coordination, in accordance with the Contractor's quality program. The Contractor's Documents programmes submitted to the Employer's Representative without this stamp of approval may be returned to the Contractor for resubmission.
- F. **Designer of Record Oversight:** ^{A17}Relevant Contractor's Documents including design drawings, shop drawings, and working drawings and their associated calculations and technical specifications shall be reviewed, approved, and certified by the Contractor's designer of record before their initial submittal to the Employer's Representative.^{A17} This review, approval, and certification requirement shall be required for subsequent submittals, which shall be accompanied with documentation of the latest review and review code provided by the Employer's Representative before re-submittal to the Employer's Representative.
- G. **Reviews and Checks:** When preparing the Contractor's Documents the Contractor shall:
1. Check and verify all field measurements.
 2. Review for completeness and for coordination of the work among Subcontractors.
 3. Check that all design drawings or shop drawing submittals indicate the applicable Section of the Contract.
 4. Ensure that all elevations on all drawings are referenced to PLD.
 5. Ensure that the design documents include design loads and stresses, calculations, and procedures.

6. Ensure that the drawings show complete design details, types of materials, and locations at which the structures will be used.
- H. **Basis and Content:** Prepare all Contractor's Documents based on the requirements of the Contract, showing the conditions of the existing structure, surface, subsurface, overhead structure, and adjoining structures. ^{A17}Such drawings shall be full-size (refer to Paragraph 1.05.F.3.) and shall be drawn to scale showing in detail all dimensions and types of Materials, as well as their quality.^{A17} The Contractor's Documents shall also provide such information as may be required to permit the fabrication, erection, or installation of the part of the Works covered.
- I. **Changes and Corrections:** No changes or corrections other than the changes and corrections noted by the Employer's Representative shall be made to any Contractor's Documents which have been reviewed as "proceed" or "proceed as noted" except by re-submittal with revisions appropriately noted. The submission shall be accompanied by justification for the changes and corrections, including necessary design calculations.
- J. **Commencement of Parts of the Works:** Except to the extent that the prior approval or consent of the Employer's Representative has been obtained for early initiation, the execution of each part of the Works shall be allowed to commence in accordance with Sub-Clause 5.2 (*Contractor's Documents*) of the Conditions of Contract.
- K. **Copies for the Employer's Representative:** ^{A17}Unless otherwise specified, upon the release of the Contractor's Documents for construction, the Contractor shall provide 2 full size copies and 2 half size copies to the Employer's Representative, for Employer use during the Works.^{A17}

1.05 DOCUMENTATION REQUIREMENTS:

- A. **Written Text Format:** Text shall be in size-11 Times New Roman font. Paper size shall be 216 by 279 mm (8-1/2 x 11 inches), with 20 pound paper used, unless otherwise specified.
- B. ^{A17}**Submittal Storage Media:** For documents to be submitted via removable data storage media, the Contractor shall use DVD or the latest disc storage-media format approved by the Employer's Representative. Each disk shall be properly labelled and shall include Contractor's name, date, project name, Contract number, and description of contents.^{A17}
- C. **Submittal Register and Submittal Subprogramme:** The Contractor shall develop a submittal register that at a minimum, includes the submittal items required in each Section. This submittal register shall, at a minimum, indicate the Contractor's identification coding for the submittal, the Section number of the Contract and title, and the submittal description and/or requirements.
 1. Each item from the submittal register shall be included in a submittal subprogramme and in the Accepted Baseline Programme of Section 01 31 00 (*Project Management and Coordination*). The submittal register and subprogramme shall be developed in such a way as to be expandable as additional submittals are identified as the design efforts progress. Additionally, this information shall be developed so that it can be submitted to the Employer's Representative in discrete packages for systems, so the overall acceptability of the individual Goods and how they work together is confirmed as part of the

design-submittal review process. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with Contract requirements.

2. ^{A17}The DTCS shall be used to create and maintain the submittal register, in accordance with Section 01 32 00 (*Project Communications and Document Management*).^{A17}

D. Identification of Submittals:

1. The Contractor shall identify all submittals pursuant to the submitted and accepted submittal subprogramme, and otherwise as directed by the Employer’s Representative. All submittals shall be clearly labeled with the Section of the Contract designation for the subject. Each submittal shall be accompanied by a letter of transmittal containing all pertinent information required to identify, check, and review the submittal, including the description of the submittal and the Section of the Contractor that requires its submission.
2. The Contractor shall use a new letter of transmittal for submittals required to be resubmitted and shall state on such transmittals the most recent review status code and submittal number given to such document by the Employer’s Representative.
3. **Submittals Register Maintenance:** The Contractor shall maintain an accurate and current register of all submittals, including the date of submission of a submittal by the Contractor, the submittal number, and the status of each submittal. This should be based on the accepted submittal programme. It shall also state the latest date of reply from the Employer’s Representative, according to the applicable review period. The Contractor shall continue to track each submittal in the submittals register until it has been reviewed by the Employer’s Representative and, when applicable, a notification to “proceed” or “proceed as noted” has been received. The Contractor shall periodically provide a copy of the submittal register to the Employer’s Representative, at the Contractor’s cost, in printed copy if requested.

- E. **CADD Manual:** The Contractor shall develop a project computer-aided design and drafting (CADD) standards and configurations manual compatible with the Employer’s CADD system. The Contractor shall adopt the latest version of the U.S. National CAD Standard for Architecture, Engineering, and Construction (NCS), including the American Institute of Architect’s CAD Layer Guidelines, the Construction Specification Institute’s Uniform Drawing System (Modules 1-8), and the Tri-Services Plotting Guidelines.. Additional layering and other required CADD conventions will be supplied to the Contractor by the Employer’s Representative.

F. Drawings:

1. Drawings prepared by the Contractor shall include design drawings, shop drawings, working drawings, and all as-built drawings and shall be accompanied by any relevant calculations.
2. The Contractor shall use the NCS for all drawings. Additionally, mechanical engineering drawings shall be prepared in accordance with ANSI/ASME

Y14.100, ASME Y14.24, ASME Y14.34M, ANSI/ASME Y14.5M, and ANSI/ASHRAE 134. Electrical engineering drawings shall be prepared in accordance with ANSI Y32.9.

3. The format for printed copies of CADD generated-drawings that are submitted by the Contractor shall be the standard “E” size with outside cut-line dimensions of 34 inches by 44 inches.
4. ^{A17}Printed copies of final as-built drawings submitted by the Contractor shall be on high-quality paper, with the line work and text of such quality as to allow digital reproduction and readable prints from the original prints, copies, and digitized files.^{A17} Paper shall be Mylar (film type) double matte, erasable, and with a thickness of 0.4 mm (typical roll size is 36 inches x 120 feet).
5. CADD drawing files shall be computer-generated drawing files in the latest version of AutoCAD or a version approved by the Employer's Representative. The Contractor shall submit all drawings in AutoCAD format with the exception of excavation drawings, which shall be provided in a Microstation V8 version or later. ^{A17}Each submittal shall include the project standard cell of blocks and font libraries and reference files used to generate the CADD drawing files and the CADD format shall be clearly noted. Each submittal shall be provided in accordance with Paragraph 1.04.^{A17} Vendor and shop drawings for systems work (signals) shall use the latest AutoCAD version that is compatible with the latest version of the design software Promis•e® used by the Employer. Promis•e® is a software from ECT International for electrical control system design and documentation that serves to create schematic drawings, panel layouts, wire lists, bills of material, and terminal plans.
6. In addition to requirements for CADD drawing files, all Contractor and vendor designs, shop drawings, and record drawings shall be processed into Adobe PDF files.
7. All elevations on all drawings shall be referenced to precise-level datum (PLD).
8. Each as-built drawing shall contain the following proprietary legend: “ACP IS THE OWNER OF THIS DRAWING. UNAUTHORIZED DISCLOSURE, USE, OR REPRODUCTION OF THIS DRAWING IS EXPRESSLY PROHIBITED.”
9. All drawings and information furnished shall be in the English language and in accordance with Section 01 42 23 (*Units of Measurement*).
10. All drawings shall be scaled and contain all details, dimensions, assemblies and subassemblies of the equipment, including complete material specifications, welding-symbol legends, manufacturer's information, equipment schedules, and a bill of materials.
11. Design drawings, shop drawings, working drawings, and as-built drawings shall be complete, detailed, dimensioned, and submitted as specified herein:
 - a. **Shop Drawings:** Shop drawings shall include items as defined in Section 01 42 16 (*Definitions*).

- b. **Working Drawings:** Working drawings shall include items as defined in Section 01 42 16 (*Definitions*). Working drawings shall convey, or be accompanied by, information sufficient to completely explain the structure, machine, or system described and its intended manner of use.
- c. **Design Drawings:** All design drawings shall be maintained in a two-dimensional (2-D) database that is compatible with the facility information model (FIM) three-dimensional (3-D) + database. Unless specifically required in a particular Section of the Contract, all drawing submittals shall be 2-D.
- d. **Certified Professional License:** Contractor's Documents submitted by the Contractor, including those for temporary structures, steel sheeting, cofferdams, signs and traffic signal supports, etc., shall bear the seal of a professional engineer. The engineer shall be a professional who has a license certified in a discipline appropriate to the work involved, in accordance with Ley Número 15 [(de 26 de enero de 1959) dictada por la Asamblea Nacional por la cual se regula el ejercicio de la profesiones de ingeniería y arquitectura (Gaceta Oficial N° 13772)] and with modifications to this law.
- e. **As-Built Drawings:** As-built drawings shall comply with the requirements of this Section and other applicable Sections of the Contract.
 - 1) The Contractor shall prepare, update, and maintain the as-built drawings throughout the progress of the Works.
 - a) A full-size printed copy set of the design drawings shall be kept at the Contractor's field office. All changes to these drawings resulting from the actual installation, construction, or as-built conditions shall be entered by hand marking on the printed copy set as soon as practicable after the changes have occurred. This printed copy set shall be used only for the entry of such changes. All entries shall be dated and attention shall be called to each entry by a "cloud" drawn around the area affected. This printed copy set shall be properly identified.
 - b) The Contractor shall periodically transfer all entries/revisions from the printed copy set to as-built drawing files. At a minimum, this transfer shall be done at the end of each month and shall be reported in the monthly report, as required in Section 01 31 00 (*Project Management and Coordination*).
 - c) All entries shall be dated and attention called to each entry by a "cloud" drawn around the area affected only in the periodic or monthly update. The "clouds" from previous months shall not be included in the most current periodic or monthly update and shall not be included in the final, completed as-built drawings.

- d) Each revision to the design drawings shall be marked with a revision number and a symbol indicating a revision. The Contractor shall maintain a log of entries/revisions made to the as-built drawing files.
 - 2) As-built drawings, both any required printed copy set and the CADD or Microstation files set (and .PDF copy if applicable), along with the updated project drawing list, will be subject to review by the Employer's Representative at any time to ensure that entries are being made as changes occur. ^{A17}The Contractor is responsible for the accuracy of all entries and shall seal the final as-built drawings. ^{A17}
- G. **Facility Information Modeling (FIM):** The Contractor shall utilize a FIM system, which shall be established in conjunction with all two-dimensional (2-D) designs.
 - 1. The facility information modelling system shall be functionally equivalent to that referred by the Construction Specification Institute (CSI) as the building information modelling (BIM) system. CSI explains that the BIM is applicable to most facilities, structures, or processes and is not limited to buildings as the system name may imply.
 - 2. The FIM shall be established for the whole of the Works.
 - 3. The FIM shall include a parametric change based engine, i.e., it shall automatically implement and coordinate changes made anywhere in model views or drawing sheets, schedules, sections, and plans.
 - 4. The FIM shall be used to coordinate and document the various design disciplines, to coordinate and document construction, and to identify and resolve potential conflicts between project elements.
 - 5. The FIM system shall be compatible with the latest version of the applications used by the Employer and shall be approved by the Employer's Representative. The FIM system used by the Employer is Autodesk® AutoCAD® Revit® Series—Systems Plus.
 - 6. All drawings databases shall be maintained and stored in a central location that shall allow for viewing, retrieving, or both (including, but not limited, to saving and printing) of the design files. The central location shall be a website coordinated with the Employer and access to the website shall be on an "authorized basis only" between the Contractor and the Employer.
- H. **Work Plans/Narrative Documents:** Work plans and other narrative documents shall comply with the requirements of this Section and other applicable Sections of the Contract.
- I. **Manufacturers' Instructions:** Wherever work is to be done in accordance with manufacturer's instructions, those instructions shall be submitted by the Contractor to the Employer's Representative for information purposes.

- J. **Specifications:** The prescriptive technical construction specifications shall be organized per the Construction Specifications Institute (CSI) Master Format 2004 and adopt the Arabic and legal style numerical format (i.e., 1.1, 1.1.1, 1.1.2, 1.1.2.1, etc.). Together with drawings, the Contractor shall prepare and submit technical specifications, including those for temporary structures, steel sheeting, cofferdams, signs and traffic signal supports, etc. The technical specifications shall bear the seal of a professional engineer, meeting the requirements specified for drawings.
- K. **Photographs:** The Contractor shall take photographs as required for documenting the progress of the Works and as per the specific requirements of the Employer's Representative. The photographs shall show in detail the initial condition of the Site, the monthly progress of the Works, and any unusual or special conditions that may develop throughout the duration of the Contract.
1. **Resolution:** Photographs shall be taken with a digital camera at a resolution not less than 10 megapixels.
 2. **Compression:** Photograph files shall be submitted in non-compressed format.
 3. **Records:** Provide an electronic and typed description of each photograph indicating the name of the item or event shown, the assigned number, the date/time and location, the camera position, the direction faced, and a brief description of what is being photographed. The description shall include, but not be limited to, items, persons, and events photographed. The original photographs, as taken, shall not be altered in any manner (including but not limited to size, brightness, saturation and color); instead, new versions of the original photograph may be created and only these may be altered.
 4. **Storage and Backup:** The Contractor shall create and maintain backup copies in alternate storage media (HDD, CD, DVD, or other). Removable media shall be stored in a safe place.
 5. **Quantity:** ^{A17}A minimum of 5 photos of each facility, component, and element identified in the Employer CBS shall be taken each month and submitted in accordance with Paragraph 1.04 to the Employer's Representative.^{A17}
 6. **Print:** Photos shall be printed on glossy, premium quality photographic paper. These printed copies shall be prints of 8 inches x 10 inches unless otherwise directed by the Employer's Representative.
- L. **Video:** The Contractor shall take video footage as required for documenting the progress of the Works and as per the specific requirements of the Employer's Representative. The video shall show in detail the initial condition of the Site, the monthly progress of the Works, and any unusual or special conditions that may develop throughout the duration of the Contract.
1. Video footage shall be taken using digital video cameras capable of producing miniature digital video (DV) footage or superior. Resolution shall be standard (SD) or high (HD) definition, with NTSC encoding; DV mini-cassette media.

2. Provide an electronic and typed shot log indicating the shot date/time and location; type of shot (e.g., close-up, or pan left, or right); the Contractor's name and a brief description of what is being filmed.

1.06 SAMPLES:

- A. The Contractor shall submit samples for review as required by the Contract or as directed by the Employer's Representative. The Contractor shall pay the shipping charges for all samples and deliver such samples to the location specified or agreed to by the Employer's Representative. ^{A17}Goods for which samples are required shall not be used in the Works until the Contractor has complied with the requirements of Sub-Clause 5.2 (*Contractor's Documents*) of the Conditions of Contract.^{A17}
- B. **Labelling:** Each sample shall be labelled and include the following information.
 1. Name of the project;
 2. Name of the Contractor or the Subcontractor;
 3. Goods represented;
 4. Place of origin;
 5. Name of producer and brand, if any; and
 6. ^{A17}Location in the Works.^{A17}
- C. **Finishes:** Samples of finishing materials shall have additional markings to enable identification in the schedules for finishings, where applicable.
- D. **Delivery:** The Contractor shall mail or deliver each shipment of samples to the location specified by the Employer's Representative, so that it will be received by the required submittal date. The Contractor shall enclose with each shipment three copies of the letter of transmittal containing the information required above, and send the original letter of transmittal and another copy to the Employer's Representative. Receipt and assignment of a review status code to a sample shall be only for the characteristics or use named and shall not be construed to change or modify the requirements of the Contract. Substitutions will not be permitted unless authorised by the Employer's Representative.
- E. The Contractor shall submit six units of each sample to the Employer's Representative, and they shall be accompanied by eight copies of a letter of transmittal providing full identification as required above, unless otherwise directed by the Employer's Representative.

1.07 QUALITY ASSURANCE:

- A. **General:** The Contractor shall use ISO document and version control quality assurance procedures for all drawings and technical specifications.
- B. **Electronic Record Sets:** ^{A17}The Contractor shall furnish two complete as-built drawing sets per Paragraph 1.04 before taking over, per the requirements of Sub-Clause 5.6 (*As-Built Documents*) of the Conditions of Contract.^{A17} Each set shall contain the final project drawing list and all as-built and shop drawings. ^{A17}Each set shall contain CADD

and Microstation drawing files (if applicable), including all background and reference files, as well as document image files to be approved by the Employer's Representative.^{A17} Additionally, the Contractor shall furnish electronic files for all other Contractor's Documents including, but not limited to, operation and maintenance manuals.

- C. **Print Sets:** The Contractor shall furnish two complete drawing sets per the requirements of Sub-Clause 5.6 (*As-Built Documents*) of the Conditions of Contract. Each set shall contain the final project drawing list and all as-built and shop drawings.

END OF SECTION