

Project No.: R.058018.001

January 31, 2018

ADDENDUM No. 1

The following changes to the tender documents are effective immediately and will form part of the contract documents:

1. GENERAL

1.1	<ol style="list-style-type: none">1. The Bidding Documents are amended as noted in this Addendum, which consists of seven (7) pages (including WSP Addendum No. 1) plus the following attachments:2. Section 01 56 00 - Temporary Barriers and Enclosures3. Section 01 78 00 – Closeout Submittals4. Section 01 91 41 – Commissioning Training5. Drawing #A0.1-R – Site Demolition Plan6. Drawing #A0.2-R – Site Construction Plan7. Drawing #E1-R - Electrical Site Plans Legend Details8. Drawing #E2-R - Electrical Partial Site Plans Motor Control Schedule.9. Drawing #E3-R - Electrical Partial Site Plans
1.2	This Addendum is issued prior to bid closing to incorporate revisions noted herein. Include in the Bid price all such revisions which will become part of the Work. Perform all such Work in accordance with the Contract Documents.
1.3	All affected drawings, schedules and panel changes shall be reflected in final as-built and manual submissions.

2. ANSWERS TO BIDDERS' QUESTIONS

2.1	<p><u>Question #1:</u> 01 11 00, Part 1.7.3 Is there an anticipated alternate traffic plan already discussed with stakeholders at the facility? Is there an approximation of the number of vehicles (and pedestrians) that pass through each gate each day?</p> <p><u>Answer to Question #1:</u> When the main (North East) Sally port is down for construction/repair then the Max (South) sally port will have to handle the volume of traffic in and out. And vice versa for when the Max is being worked on the Main gate will have to handle the volume. Refer to attached revised Drawing A0.1 for phasing requirements for this project.</p> <p><u>Question #2:</u> Are there other projects onsite expected to be happening concurrently with this project that may impact access/movement of trades working on this project?</p> <p><u>Answer to Question #2:</u> There are several projects ongoing and operational movements through the facility must be maintained. Movement and access of trades will be more affected by operational security requirements than by other contractor activities.</p> <p><u>Question #3:</u> Will temporary barricades/fences be required when motorized gates and existing foundations are being demolished? If so, what height is required?</p> <p><u>Answer to Question #3:</u> The continuous operation of the facility must be maintained. When gates or fences are compromised, temporary fences or barriers must be provided that maintain the security provided by the element being compromised. Temporary gates can be manually operated and secured by a padlock. Refer to revised Section 01 56 00 for description of required temporary fence types. Refer to attached revised Drawing A0.1 for temporary fencing and phasing requirements specific to this project.</p>
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Question #4: 01 35 13, Part 1.5.2 Is there a limit on the number of vehicles/pieces of construction equipment that will be allowed to work onsite concurrently? IE: if an excavation contractor has a backhoe onsite, are they also allowed to have a truck and or other equipment at the same location as the work may require?

Answer to Question #4: There are no limitations on the number of vehicles or equipment allowed on site in order to perform the required work. The Contractor is cautioned to minimize what is brought 'inside' as the inspection and tool count process involved in passing through the Sallyport is time consuming for all parties involved. If they have tools on board they will be allowed in thru the sallyport. Normal procedure is to drive tools in, drop them off, and then the vehicle must be returned outside the walls. Then that vehicle is allowed back in when equipment/tools must be picked up. In the case of a back hoe - due to security reasons it will be allowed in for the use for the day but will not be allowed to stay overnight - it will have to be returned outside of the walls and parked in a mutually designated parking spot that can be arranged prior.

Question #5: 01 35 13, Part 1.5.1 Work hours noted are Mon-Fri, 7:30 to 6:00. During the site visit, hours were reported to be 8:00 to 5:00 Mon-Fri. Please clarify. Please also advise if a 6 day work week would be considered as a blanket allowance/exception for the entire project.

Answer to Question #5: Revise Article 1.9.1 in Section 01 35 13 to read 'Work hours within the Institution are: Monday to Friday 8:00 a.m. to 5:00 p.m.' Revise Article 1.9.2 of Section 01 35 13 to read 'With permission of the Departmental Representative, work hours may be extended to 7:00 p.m. and include Saturdays.' New paragraph 1.9.3 to read 'A minimum of three (3) days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waived by the Departmental Representative.'

Question #6: 01 91 13, 01 91 41, 26 05 01. These three sections all make reference to commissioning/startup/training plans. There appears to be some duplication of requirements between these sections. Please clarify which section to follow. We recommend inclusion of videotaped training session as noted in section 26 05 01, Part 37.0.5 be included in final requirements.

Answer to Question #6: See attached revised Section 01 78 00 for inclusion of training videos in each of the operating and maintenance manuals. See attached revised Section 01 91 41 for inclusion of videotaped training session requirements. Refer to WSP Addendum No. 1 for revisions to Section 26 05 01.

Question #7: 01 91 41, Part 1.5.2 How many 3 hour training sessions are required?

Answer to Question #7: Revise Paragraph 1.5.2 in Section 01 91 41 to read 'Provide one three (3) hour session for training of operations staff and a second three (3) hour session for training of maintenance staff.' Revise Paragraph 37.1 in Section 26 05 01 to read 'Refer to Section 09 41 00 for training session requirements. Provide documentation in maintenance manual confirming that instruction has been provided including description of system, owner representatives in attendance, date, and signatures.'

Question #8: 32 31 00, Part 2.1.5.5 What size (wattage) of heater is required for the gearbox immersion heater and the strip heater in the control cabinet? We recommend foil back insulation to be installed on all interior surfaces of the operator cabinet.

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Answer to Question #8: New sub-paragraph 2.1.5.5.1 to read 'Manufacturer to size heater and heating strip to allow gearbox and control box equipment to operate as intended when ambient temperatures are -40C'.

Question #9: 32 31 00, Part 1.1.2 Specifies motor boxes to be shipped with construction core and one key code for construction only. Part 2.1.6.4 specifies 3 keys to be provided per construction key code "as noted in part 1". Please clarify. Please clarify how many unique lock cylinders and keys specific to facility requirements will be required for the finished product and quantity/type of keys (Folger Adams, Southern Steel) as noted in Part 1.1.2.

Answer to Question #9: Revise Paragraph 2.1.6.4 of Section 32 31 00 - Vehicle Sallyport Gates to read 'Motor Box Lock: Motor box shall be locked with a prison dead bolt. Three (3) mogul keys shall be provided per construction key code as noted in Part 1'.

Question #10: 32 31 00, Part 2.2 Control section details maintained contact (constant pressure on the controls) with gate in site in order to cause the gate to move as a requirement. This is in compliance with UL325 for a Class IV gate application (correctional environment). During the site visit, it was observed that momentary contact on the controls (we were only permitted to see the two GUI (Graphical User Interface) in Unit 6) would cause the gates to move without continued supervision. In the absence of through beam photocells, this is in direct contravention of UL325. Furthermore, it was observed that pedestrians frequently use the automated vehicle gates as a means of access/egress. This is not permitted for gate systems compliant with UL325/ASTM F2200. Warning signs noted in same section Part 3.5.4.3 detail this instruction. It may be that the facility chooses to ignore this listing. We highly recommend the use of concealed through-beam photocells as a secondary safety measure if the observed method of operation is to continue.

Answer to Question #10: The Institution would prefer to have maintained contact operation of all gates complete with a through-beam secondary entrapment protection device. Revise sub-paragraph 2.2.1.1 in Section 32 31 00 - Vehicle Sallyport Gates to read 'Vehicle Sallyport Gate(s): Constant pressure on the pushbutton control, with the gate in site, is required as a primary entrapment protection device to keep the gate in motion. When the pushbutton is released, the gate will stop. Secondary entrapment to be provided by use of two photobeams for the open and close direction of travel. An auto-close timer shall not be used with constant pressure push button controls'.

Question #11: During the site visit, it was observed that there are existing intercom call stations mounted on or near the existing motorized gates. These stations are not referenced in the specifications or on the electrical drawings. Are they to be salvaged and re-installed in conjunction with the new motorized gates? If so, are there as-built electrical diagrams detailing all wiring runs associated with this hardware?

Answer to Question #11: Intercom stations to be re-installed with the new gates. To our knowledge there is not existing as-built drawings for the intercom station. Re-installation details for existing intercoms to be finalized during construction.

Question #12: Are as-built diagrams, software, and name of manufacturer/installer/programmer of existing GUI hardware available?

Answer to Question #12: There is no as-built information on the GUI hardware. Marcomm was the installer/programmer for the GUI.

Question #13: Drawing E2 notes that for VMG5, the two existing key switches are to be re-connected to the new gate. During the site walk, the escort noted that one of the keyswitches had been abandoned/disconnected more than 8 years ago. Please advise regarding this note.

Answer to Question #13: Two new key switches are to be provided as indicated on drawings.

Question #14: In light of the question above, Drawing E1 notes that key operated control stations (in the legend) are to be supplied by the gate supplier. Please clarify.

Answer to Question #14: Keyed switches to be provided by gate supplier as indicated.

Question #15: Drawing E2, Specifications – In the drawings and specifications, there are references to maintained contact buttons, momentary contact buttons, 3 button control stations, remote controls, keyswitches, and PLC controls. It is not clear to me exactly what hardware is to be re-used or supplied new for each gate. Typically, sally port gates are interlocked via a simple relay assembly in the corresponding control panel (whereas only one gate can be opened at a time). This interlock function is virtually standard in prison sally port applications. Multiple gates can be configured to be interlocked if required (south entry for example). An override function can be provided to override this condition in case of an emergency. Please advise how all gates are to be controlled and via what devices.

Answer to Question #15: VMG1 - controlled by touchscreen in Guard tower and pushbutton controls.

VMG2 - Controlled by pushbuttons in guard tower.

VMG3 - controlled by momentary pushbuttons as outlined in note 6.

VMG4 - controlled by momentary pushbuttons as outlined in note 6.

VMG5 - controlled by momentary pushbuttons as outlined in note 6.

VMG6 - Controlled via PLC from Unit 6 guard station.

VMG7 - Controlled via PLC from Unit 6 guard station.

VMG 8 - Controlled via PLC from Unit 6 guard station.

Push button stations shall be keyed to allow operation.

Pushbuttons shall align with section 32 31 00.

Re-use existing key switches, control relays, and PLC equipment. Provide and install all new equipment, push buttons, etc to tie new gates into existing equipment.

Interlocks:

VMG1, VMG2, VMG7 to be interlocked

VMG7 & VMG8 to be interlocked

VMG3 & VMG4 to be interlocked

Question #16: Do any of the gate controls require interface with a fire alarm panel?

Answer to Question #16: Not at this time.

Question #17: 32 31 13, Part 2.1.3.4 Corner and Gate posts are noted as minimum dia. 143.3mm. On Dwg A1.9 and in the CSC TCD part 4.2.8.4 Corner and Gate posts are noted as 150mm diameter. Please clarify.

Answer to Question #17: Revise corner and gate post diameter on Drawing A1.9 to read: '143.3 mm'. Revise corner and gate post minimum size in New Construction Fence Legend on Drawing A0.2 to read 143.3 mm O.D. 21.0 kg/m.

Question #18: 32 31 13, Part 2.1.7.3 states that swing gates are to be supplied with latch and latch catch with provision for padlock that can be operated from either side of the gate. Drawing A1.9 Gate Legend note 3 (from CSC TCD) states that vehicle swing gates are to be supplied with foot, mid height, and top locking detention grade cremone bolts or engineered mechanism and locked with padlocks. Which instruction is to be followed? If the CSC Technical Criteria is to be followed, does the engineered mechanism require an engineer's stamp? How many padlocks are to be used if this lock type is required? The drawings on A1.9 do not show a header for a top locking point.

Answer to Question #18: Will respond to this question in a later addendum.

Question #19: During the site visit, we walked through the pedestrian gate shown in picture 27. It was said that this gate is to be replaced. The demolition / construction plans do not support this comment. Please confirm. Also, please confirm if there are any gates (including qty if so) with electro-mechanical locks (as is installed on this gate) that are to be replaced.

Answer to Question #19: There are no pedestrian gates with electro-mechanical locks that need replacement at this time.

Question #20: Drawing A0.1 - DF5 is noted as a demolition type in the fence legend, please confirm where it is used in the drawing.

Answer to Question #20: DF5 will be deleted from Demolition Fence Legend. Refer to attached revised Drawing A0.1.

Question #21: Drawing A0.2 – Note: All wire ties are to be spot welded for ALL ties. This is very difficult to accomplish with galvanized 9 gauge wires. Will it remain a requirement?

Answer to Question #21: Most fencing does not require spot welding of wire ties. The only exception are demising fences where there are inmates on both sides of the fence. Refer to revised Drawing A0.2 for demising fence locations and revised wire tie spot welding requirements.

Question #22: Drawing A0.2 – Fence legend shows a black squiggle line denoting new supports as required and BTC on interior fence lines intersecting the perimeter wall. Most of the fence sections that abut the perimeter wall show this line, however, a number of the fence lines on the South and West side of the facility do not show this requirement. Is it required for all fences as noted in the Technical Criteria Section 4.1.8?

Answer to Question #22: Where there is no black squiggle, no double concertina is required. Refer to attached revised Drawing A0.2 for revised number of black squiggles.

Question #23: What is the length of the concrete grade beam for VMG1?

Answer to Question #23: Grade beam is 9760mm long.

Question #24: On drawing A1.4 it shows the line of asphalt paving overlay. Are we to demo and remove all of the asphalt in this area in install new paving? Or just as required to perform our construction?

Answer to Question #24: Remove what is necessary to provide the required sloped asphalt paving overlay.

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3. SPECIFICATIONS

3.1	Section 01 35 13 – Security Requirements: See attached revised section. Refer to answer to question #5 above for description of changes.
3.2	Section 01 56 00 - Temporary Barriers and Enclosures: See attached revised section. Refer to answer to question #3 above for description of changes.
3.3	Section 01 78 00 – Closeout Submittals: See attached revised section. Refer to answer to question #6 above for description of changes.
3.4	Section 01 91 41 - Commissioning: Training: See attached revised section. Refer to answer to question #7 above for description of changes.
3.5	Section 26 05 01 – Electrical General Provisions: Refer to attached WSP Addendum No. 1 for description of changes.
3.6	Section 32 31 00 - Vehicle Sallyport Gates See attached revised section. Refer to answers to questions #8 and #9 above for description of changes.
3.7	Section 32 31 13 - Chain Link Fences and Gates: See attached revised section. Refer to answer to question #17 above for description of changes.

4. DRAWINGS

4.1	Revised Drawing #A0.1 – Site Demolition Plan: See attached revised drawing #A0.1 – Site Demolition Plan.
4.2	Revised Drawing #A0.2 – Site Construction Plan: See attached revised drawing #A0.2 – Site Construction Plan.
4.3	Drawing #1.9 - Interior Manual Gates: Revise drawing as per answer to Question #17 above.
4.4	Drawing #S1.3 - South Sallyport Exterior Gate Structural (VMG 1): Refer to attached WSP Addendum No. 1.
4.5	Drawing #E-1 - Electrical Site Plans Legend Details See attached revised drawing #E-1 - Electrical Site Plans Legend Details. Refer to attached WSP Addendum No. 1 for description of changes.
4.6	Drawing #E-2 - Electrical Partial Site Plans Motor Control Schedule See attached revised drawing #E-2 - Electrical Partial Site Plans Motor Control Schedule. Refer to attached WSP Addendum No. 1 for description of changes.
4.7	Drawing #E-3 - Electrical Partial Site Plans: See attached revised drawing #E-3 - Electrical Partial Site Plans. Refer to attached WSP Addendum No. 1 for description of changes.

WSP - Addendum 1:

AMENDMENTS TO THE SPECIFICATIONS

Reference: 26 05 01 – ELECTRICAL GENERAL PROVISIONS

1. Revise wording of section 37.1 to:
 - a. Refer to Section 09 41 00 for training session requirements. Provide documentation in maintenance manual confirming that instruction has been provided including description of system, owner representatives in attendance, date, and signatures.

AMENDMENTS TO THE DRAWINGS

Reference:

1. Drawing S1.3
 - a. Length of grade beam shown in Plan 1 and Elevation 2 is 9760mm.
2. Drawing E-1
 - a. Gate operation wording added to drawing.
 - b. De-icing controller in legend revised to Raychem #APS-3C or Approved equivalent. 3.

Drawing E-2

- a. Updated Note 5
- b. Updated Note 7
- c. Updated Note 10.
- d. Updated circuiting and voltage for heating cable on details 1, 3, and 4.
- e. Added de-icing controller to detail 2.
- f. Added circuit and notes to de-icing controller in detail 6.

4. Drawing E-3

- a. Revised symbol on detail #2.
- b. Updated Note 10.
- c. Updated Note 13.
- d. Added Note 19.
- e. Updated voltage and circuiting for heating cable on details 2, 3, 6, and 7.
- f. Revised note associated with de-icing sensor in details 2, 6, and 7.
- g. Added de-icing controller to detail 8.
- h. Added circuit and notes to de-icing controller in detail 5.

Attachments:

Revised Electrical Drawings E-1, E-2, E-3

END OF ADDENDUM NO. 1

Part 1 General

1.1 INSTALLATION AND REMOVAL

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

1.2 CONSTRUCTION FENCING

- .1 Erect temporary construction fencing and gates as indicated.
- .2 Install Type 2 temporary fencing, with and without BTC, as well as Type 3 temporary fencing as indicated on the drawings and as described below:
 - .1 Type 1 Fence (for reference only/not used on this project):
 - .1 Rental construction protection fence comes with welded wire mesh and components conforming to ASTM F2919 Welded Mesh Fence specification. Mesh is galvanized steel no larger than 50X150mm (vertically long rectangle) with vertical wire projecting and exposed at top. Fence must be at least 1800mm high and secured with pins inserted in the ground through the 'T' base support. Sections of fence must be securely clamped together to ensure that the each fence run acts as a continuous barrier which will resist lateral forces and separation. Sloped runs must be protected by mesh panels to ensure continuity of barrier from ground up.
 - .2 Type 2 Fence:
 - .1 This fence is similar to Type 1 above but shall be 2400mm high. Ground along the fence run shall be surfaced with compacted gravel. 'Barbed tape concertina' (BTC) where required and used as an alternative to Type 3 fence shall be as per the Typical CSC Technical Criteria Fence Construction in the New Construction Fence Legend on Drawing A0.2. except that it could be directly attached with galvanized twist ties or clips to the top rail or wire resting against the mesh on the threat side. Use of steel arms fastened to the posts may also be considered for the support of 2 barbed wires and BTC.
 - .3 Type 3 Fence:
 - .1 This fence conforms to the criteria set out in the Typical CSC Technical Criteria Fence Construction in the New Construction Fence Legend on Drawing A0.2. It shall be topped by steel arms supporting 2 strands of barbed wire and BTC. The arms shall have 2 strands of barbed wire with the BTC cradled between. Steel arms lean towards the threat side.
- .3 Maintain fence in good repair.

1.3 GUARD RAILS AND BARRICADES

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.

- .2 Provide as required by governing authorities.

1.4 WEATHER ENCLOSURES

- .1 Enclose exterior work for temporary heat.
- .2 Design enclosures to withstand wind pressure and snow loading.

1.5 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

1.6 ACCESS TO SITE

- .1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.7 FIRE ROUTES

- .1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

- .1 Protect surrounding private and public property from damage during performance of Work.
- .2 Be responsible for damage incurred.

1.9 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.10 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

Part 2 Products

2.1 NOT USED

.1 Not Used.

Part 3 Execution

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned after final inspection, with Departmental Representative's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four (4) final copies of operating and maintenance manuals in English.
- .6 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .7 If requested, furnish evidence as to type, source and quality of products provided.
- .8 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .9 Pay costs of transportation.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-warranty Meeting:
 - .1 Convene meeting one week prior to contract completion with Departmental Representative, in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify Project requirements.
 - .2 Review manufacturer's installation instructions and warranty requirements.
 - .2 Departmental Representative to establish communication procedures for:
 - .1 Notifying construction warranty defects.
 - .2 Determine priorities for type of defects.
 - .3 Determine reasonable response time.
 - .3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
- .2 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action

1.3 FORMAT

- .1 Organize data in the form of an instructional manual.

Part 1 General

1.1 TRAINEES

- .1 Trainees: personnel selected for operating and maintaining this facility. Includes Facility Manager, building operators, maintenance staff, security staff, and technical specialists as required.
- .2 Trainees will be available for training during later stages of construction for purposes of familiarization with systems.

1.2 INSTRUCTORS

- .1 Contractor and certified factory-trained manufacturers' personnel: to provide instruction on the following:
 - .1 Operation, shut-down of equipment, components and systems.
 - .2 Control features, reasons for, results of, implications on associated systems of, adjustment of set points of control and safety devices.
 - .3 Instructions on servicing, maintenance and adjustment of systems, equipment and components.
- .2 Contractor and equipment manufacturer to provide instruction on:
 - .1 Operation, maintenance and shut-down of equipment they have certified installation, started up and carried out PV tests.

1.3 TRAINING OBJECTIVES

- .1 Training to be detailed and duration to ensure:
 - .1 Safe, reliable, cost-effective, energy-efficient operation of systems in normal and emergency modes under all conditions.
 - .2 Effective on-going inspection, measurements of system performance.
 - .3 Proper preventive maintenance, diagnosis and trouble-shooting.
 - .4 Ability to update documentation.
 - .5 Ability to operate equipment and systems under emergency conditions until appropriate qualified assistance arrives.

1.4 TRAINING MATERIALS

- .1 Instructors to be responsible for content and quality.
- .2 Training materials to include:
 - .1 "As-Built" Contract Documents.
 - .2 Operating Manual.
 - .3 Maintenance Manual.
 - .4 Management Manual.
 - .5 PV Reports.

- .3 Project Manager, Commissioning Manager and Facility Manager will review training manuals.
- .4 Training materials to be in a format that permits future training procedures to same degree of detail.
- .5 Supplement training materials:
 - .1 Transparencies for overhead projectors.
 - .2 Multimedia presentations.
 - .3 Manufacturer's training videos.
 - .4 Equipment models.

1.5 SCHEDULING

- .1 Include in Commissioning Schedule time for training.
- .2 Provide one three (3) hour session for training of operations staff and a second three (3) hour session for training of maintenance staff.
- .3 Training to be completed prior to acceptance of facility.

1.6 RESPONSIBILITIES

- .1 Be responsible for:
 - .1 Implementation of training activities,
 - .2 Coordination among instructors,
 - .3 Quality of training, training materials,
- .2 Departmental Representative will evaluate training and materials.
- .3 Upon completion of training, provide written report, signed by Instructors, witnessed by Departmental Representative.

1.7 TRAINING CONTENT

- .1 Training to include demonstrations by Instructors using the installed equipment and systems.
- .2 Content includes:
 - .1 Review of facility and occupancy profile.
 - .2 Functional requirements.
 - .3 System philosophy, limitations of systems and emergency procedures.
 - .4 Review of system layout, equipment, components and controls.
 - .5 Equipment and system operation, monitoring, servicing, maintenance and shut-down procedures.
 - .6 Maintenance and servicing.
 - .7 Trouble-shooting diagnosis.
 - .8 Inter-Action among systems during integrated operation.

- .9 Review of O&M documentation.
- .3 Provide specialized training as specified in relevant Technical Sections of the construction specifications.

1.8 VIDEO-BASED TRAINING

- .1 Manufacturer's videotapes to be used as training tool with Departmental Representative's review and written approval 3 months prior to commencement of scheduled training.
- .2 On-Site training videos:
 - .1 Videotape training sessions for use during future training.
 - .2 To be performed after systems are fully commissioned.
 - .3 Organize into several short modules to permit incorporation of changes.
- .3 Production methods to be professional quality.
- .4 Refer to Section 26 05 01 – Electrical General Provisions for further requirements.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
- .4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: Manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 CONTENTS - EACH VOLUME

- .1 Table of Contents: provide title of project;
 - .1 date of submission; names,
 - .2 addresses, and telephone numbers of Departmental Representative and Contractor with name of responsible parties;
 - .3 schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
 - .1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment
- .5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .6 Training: Refer to Section 01 91 41 - Commissioning: Training.

1.5 AS-BUILTS AND SAMPLES

- .1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to the Contract.

- .5 Reviewed shop drawings, product data, and samples.
- .6 Field test records.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

1.6 RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measured depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
- .5 Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.7 EQUIPMENT AND SYSTEMS

- .1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .12 Include test reports as specified in Section 01 91 13- General Commissioning (Cx) Requirements.
- .13 Additional requirements: As specified in individual specification sections.

1.8 MATERIALS AND FINISHES

- .1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional Requirements: as specified in individual specifications sections.

1.9 SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.10 MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.
- .5 Obtain receipt for delivered products and submit prior to final payment.

1.11 SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Deliver to site; place and store.
- .4 Receive and catalogue all items. Submit inventory listing to Departmental Representative. Include approved listings in Maintenance Manual.

1.12 STORAGE, HANDLING AND PROTECTION

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.

1.13 WARRANTIES AND BONDS

- .1 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
 - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
 - .4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
 - .5 Verify that documents are in proper form, contain full information, and are notarized.
 - .6 Co-execute submittals when required.
 - .7 Retain warranties and bonds until time specified for submittal.
- .2 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .3 Respond in timely manner to oral or written notification of required construction warranty repair work.

1.14 TRAINING VIDEOS

- .1 Include one copy of training videos in each of the operating and maintenance manuals.
- .2 Refer to Section 26 05 01 – Electrical General Provisions for further requirements.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION