1. **GENERAL**
   1. **Summary**
      1. This section outlines the data that forms the contents of the Operations and Maintenance Manuals.
      2. Refer to Section 01 78 39 for general requirements on Record Documents.
   2. **System Description**
      1. Building overview to include occupancy, function, location, and brief description.
      2. All mechanical and electrical systems will be described from a top down approach (describe major systems first, then the individual subsystems at the zone level).
      3. Provide a brief description describing the operation and controls of major mechanical and electrical equipment.
   3. **Maintenance Schedules**
      1. Provide maintenance schedule detailing regular maintenance intervals for:
         1. Building envelope.
         2. Finished surfaces.
         3. Equipment
      2. Schedule should be divided to capture major and minor intervals with different scopes and instructions of maintenance.
      3. Capture key pieces of equipment including items such fan and motor bearing lubrication, belt schedule, and air filter schedule.
   4. **Spare Part Inventory**
      1. Refer to Section 01 78 45 Spare Parts and Maintenance Materials.
      2. Provide an inventory list of spare parts and specials tools identical to those installed, manufactured by original equipment manufacturer. Typical parts in this inventory include belts, pulleys, bearings, filters and fuse types.
      3. Include paint formulas in this section.
      4. Indicate on inventory whether spare parts and special tools were supplied as part of project or not.
      5. Indicate where spare parts are currently stored if they were supplied as part of the project.
      6. Identify spare parts by the following:
         1. Include proper naming and part numbers wherever applicable.
         2. Include system and piece of equipment to which part belongs.
         3. Include location and room number where spare parts are associated to (location of equipment and systems).
      7. Provide maintenance materials identical to those installed.
   5. **Equipment Suppliers**
      1. Provide organized list of company, name of contact, phone numbers and email addresses of all subcontractors and suppliers. Additionally, list the contact information for local support of each company.
      2. Indicate systems and materials for which the subcontractor/suppliers are responsible for.
   6. **Guarantees, Warranties, and Bonds**
      1. Refer to Section 01 78 36 Warranties.
      2. All items should be indexed properly and in navigable pdf for easy access.
      3. Guarantee, Warranties and Bonds documentation should indicate the following:
         1. Name and address of project – include the building number(s).
         2. Warranty/Guarantee/Bond commencement date and duration.
         3. Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
         4. List subcontractor, supplier, and manufacturer with name, address, telephone number, and web address of responsible principal.
         5. Documents are to be in proper form, contain full information, and notarized where applicable.
         6. Include signature and seal of Trade Contractor.
         7. For warranties, include instructions on how to make warranty claims.
   7. **Permits, Licenses, Tests, and Certificates**
      1. The first certificate in this section must be the Substantial Completion Certificate.
      2. Tests and certificate documentation should be coordinated with Commissioning Authority wherever possible.
      3. Index all items for easy access.
      4. Tests and Certificates documentation should Indicate the following:
         1. Applicable system or equipment.
         2. Date testing or certification occurred.
         3. Indication of result of test and/or achievement of certification.
         4. Signature and seal of applicable parties.
   8. **Product Data**
      1. As-Installed Product Data:
         1. Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
         2. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
         3. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
         4. If possible, a Change Order proposal should include resubmitting updated Product Data. This eliminates the need to mark up the previous submittal.
         5. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
         6. Include manufacturer operation and maintenance data wherever possible.
      2. Materials and Finishes:
         1. Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.
         2. Include instructions for cleaning agents and methods, precautions against detrimental agents and methods, and the 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.
      3. Record Shop Drawings:
         1. Provide as per Section 01 78 39 Record Documents.
   9. **Record Drawings and Specifications**
      1. Refer to Section 01 78 39 Record Documents for requirements.
      2. Record drawings and specifications are to be included as part of the Operation and Maintenance Data.
      3. A valve tag schedule is to be included in this section with key information such as valve number, system, flow, type and size.
      4. When applicable, include a labeling and identification schedule for pipe identification (symbol, color), as well as ceiling access (symbol, color).
   10. **Commissioning and Balance Report**
       1. Commissioning and Balance Report are to be included as part of the Operation and Maintenance Data in hard copy format.
   11. **Electrical Panel Schedule(s)**
       1. Include copies of Electrical panel schedules – for both the Manual and to be posted at the actual panel(s).

\*\*\* END OF **OPERATIONS and MAINTENANCE DATA** SECTION \*\*\*