

II. ARCHITECTURAL/ENGINEERING DOCUMENT DELIVERABLES

2.02 TXST FM Data Requirements

PART 1 - GENERAL

1.1 -SUMMARY

A. Description:

1. This section specifies the standards that the Contractor shall follow for their scope of work related to Facilities Management Data (FM Data) Requirements. This section also includes information related to documents that are required for operations and maintenance support functions.
2. This section does not negate any other section that requires Commissioning or Operations and Maintenance Data.
3. Part 3 includes information about owner provided tools for managing the facilities management data and documents.

PART 2 - PRODUCTS

2.1 -SUBMITTALS

A. Facility Equipment Information

1. **Content:** The Contractor to provide the following information in the owner provided web-based tool:
 - a. Contact Information (email, company name, website, phone number) per the following:
 - i. manufacturers providing equipment from 'equipment information' section
 - b. Space Information (Provided by Architect):
 - i. room number, room name, floor number, square foot, building name
 - c. Equipment Information: provide information for each individual piece of equipment identified in Table 01 – Equipment Groups.

Note: Equipment Groups are typical categories of assets with common characteristics and attributes that match equipment groups in the owner's operational systems. Effort has been made to align the information requested during construction to the format and content of the operational systems that will receive the information after turn-over to operations. Table 01 is a master list of equipment (or asset) groups that Operations requires to the extent that this equipment is part of the final construction scope of work (new and renovation). Contractor is also responsible for identifying new asset groups to owner for assets & systems requiring special maintenance; this ensures that systems or products that are not on the owner's equipment group list but are important for regular maintenance and building performance are accidentally omitted from this facility equipment information turnover.

- i. Construction Start Data:
 - a. General: equipment name (from plans), equipment location (room number), equipment description (with specific location as applicable), asset group.
 - b. Parent: Identify parent (upstream) component equipment as applicable. Parent / child relationships between equipment are critical to operational effectiveness after transition to operations. This information is used in the operational systems by the owner's facilities management organization.
 - i. ELEC: this should indicate the electrical panel feeding power to the component (asset / piece of equipment).
 - ii. HVAC: This shall indicate the mechanical equipment connections to the component (asset / piece of equipment)
 - c. Support Locations: Support locations are the spaces (room numbers) that are impacted by (or supported by) equipment. This information could be limited to one room or multiple rooms. This information aids the operation team after transition to operations by knowing what spaces are affected by equipment that needs to be isolated (shut down) for various reasons. This information shall be provided for all HVAC terminal devices, such as FCU's, VAV's, and FPB's.
- ii. Submittal Data:
 - a. General: manufacturer, model, expected life, approximate cost, warranty duration, associated approved submittal, Operations & Maintenance Manual (O&M)
 - i. This is information that will be added to the FM data once submittals are approved and specific equipment information has been determined.
 - b. Specific Attributes: For a list of applicable attributes, see Table 02 - Equipment Attributes. Equipment attributes vary by equipment group (asset group).
- iii. Install Data: serial number, barcode, name plate photo, equipment photo, maintenance instructions document.
 - a. Photos should be taken of the equipment in the final installed condition (not in-process condition); however, the team shall collaborate with the owner on desired expectations prior to taking photos.
 - b. Maintenance instructions document shall include the manufacturers recommended regular maintenance requirements, including schedule and associated tasks list. However, this is not a detailed report with step by step instructions for how to perform the maintenance tasks.
 - c. Tags / Barcodes shall be provided by the Owner for Contractor to place on equipment in field. The Contractor shall request these barcodes from the Owner, providing the total number of equipment assets to the Owner. The Owner shall coordinate with the appropriate operations and maintenance organization to secure the equipment barcodes.

- iv. Close-Out Data: commissioning documents associated with a specific piece of equipment (pre-functional test, etc.), associated warranty document in PDF format
 - d. Referenced Documents:
 - i. Associated electronic files of referenced documents from 'equipment information'.
 - ii. Names of electronic files shall match what is referenced in the appropriate fields for document name. This specification does not prescribe a document nomenclature; however, it is expected that owner requirements detailing file naming are used with all referenced documents required in this specification.
 - e. Decommissioned Equipment
 - i. List of equipment (corresponding to list from Table 01 Required Equipment) that was removed from the facility because of demolition or replacement during the project. List shall contain equipment name, location, and asset group. This shall be provided at construction start and be in spreadsheet (XLS) format.
2. **Deliverable Format:** The Contractor will provide facilities information, per the following:
- a. Contact, space, and equipment information shall be provided in spreadsheet format (XLS) and be an as-built representation. See Tables 01, 02, and 03.
 - b. Referenced documents shall be provided in electronic format and organized and named per 01 77 00 – Closeout Procedures digital document structure.

3. **Schedule for Data & Document Development:**

The Contractor shall provide equipment information and documents throughout the project as the information becomes available and approved for use, by the following milestones.

- a. Data at construction start.
- b. Data and documents at the approved submittals stage.
- c. Data at the install / inspection stage.
- d. Data leading up to substantial completion stage.

The intent is for the Contractor to make reasonable progress on the FM Data deliverables over the duration of the construction effort and not to defer the effort until the final months of the project. This includes the preparation of documents including Operation & Maintenance documents, which are to be provided with this effort immediately following equipment submittal approval. The entirety of the final data is to be completed by substantial completion.

4. **Final Deliverable:**

The Contractor shall provide final deliverables to the owner at substantial completion date. Deliverable data shall be in spreadsheet format (XLS) along with zipped folder of all associated reference files. Format of deliverables, content, and schedule are addressed in other parts of this specification section.

The contractor shall establish a meeting no later than two weeks prior to substantial completion to review final deliverable with the owner project manager and physical plant directors.

PART 3 - EXECUTION

3.1 -Process

A. Submission and Review of Facilities Management Data (FM Data)

1. Data shall be submitted (made available) to owner at the agreed upon milestone dates for review purposes. The owner will review data for accuracy with documents and field conditions by various means.

Table 01 - Required Equipment List

Note 1: This list (table) includes required equipment that can also be called an “Equipment Group Matrix” because the list is organized by “Asset Group” (see description below). This table is organized by “System”.

Note 2: “Serialized” Assets are assets that will have an individual instance by piece of equipment and will be tracked individually. Example: AHU or Chiller. “Group” Assets are assets that will be handled as a “group” and not tracked individually. Example: Fire Alarm Devices

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
ARCHITECTURAL	Ceiling Tile [One Per Building]	Group
ARCHITECTURAL	Floors [One Per Building]	Group
ARCHITECTURAL	Interior Art [One Per Building]	Group
ARCHITECTURAL	Operable Partitions	Serialized
CONVEYING	Dumbwaiter - Elevator & Controls	Serialized
CONVEYING	Freight - Elevator & Controls	Serialized
CONVEYING	Passenger - Elevator & Controls	Serialized
CONVEYING	Stage Lift - Elevator & Controls	Serialized
CONVEYING	Wheelchair/Personal Lift - Elevator & Controls	Serialized
EGRESS	Exterior Doors	Serialized
EGRESS	Special Access Doors (Doors Requiring Keys)	Serialized
EGRESS	Special Action Doors	Serialized
ELEC	Automatic Door Openers	Serialized
ELEC	Automatic Doors	Serialized
ELEC	Automatic Transfer Switch	Serialized
ELEC	Backup For Network Switch Used For Security Devices	Serialized
ELEC	Battery Systems	Serialized
ELEC	Communication Manhole	Serialized
ELEC	Distribution Panel	Serialized
ELEC	Drives (VFD Or Etc.)	Serialized
ELEC	Electric Meter	Serialized
ELEC	Electrical Manhole	Serialized
ELEC	Emergency Generator	Serialized
ELEC	Emergency Lights	Serialized
ELEC	Equipment Disconnects	Group
ELEC	High Voltage Switches	Serialized
ELEC	Interior Light Fixtures	Group
ELEC	Lighting Control Equipment	Serialized
ELEC	Lighting Control Panel	Serialized
ELEC	Lightning Protection	Group
ELEC	Loading Dock Lift	Serialized
ELEC	Main Breaker/Switchgear	Serialized
ELEC	Mechanized Shades	Serialized

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
ELEC	Medium & Low Voltage Transformers	Serialized
ELEC	Solar/PV Equipment	Serialized
ELEC	Surge Protectors	Serialized
ELEC - DISTRIBUTION	High Voltage Transformer	Serialized
FIRE ALARM	Annunciators	Serialized
FIRE ALARM	Fire & Smoke Dampers	Serialized
FIRE ALARM	Fire Alarm Panels	Serialized
FIRE ALARM	Fire Indicating Devices - Audio Visual Alarm	Group
FIRE ALARM	Fire Initiating Devices - Pulls, Duct, Heat Detectors	Group
FIRE SUPPRESSION	Fire Department Connections	Serialized
FIRE SUPPRESSION	Fire Extinguisher Type A	Serialized
FIRE SUPPRESSION	Fire Flow Meters	Serialized
FIRE SUPPRESSION	Fire Hydrants	Serialized
FIRE SUPPRESSION	Fire Pump	Serialized
FIRE SUPPRESSION	Jockey Pump	Serialized
FIRE SUPPRESSION	Vic Gate OS&Y Valve	Serialized
FOOD SERVICE	Air Screen	Serialized
FOOD SERVICE	Beverage System	Serialized
FOOD SERVICE	Cash Register	Serialized
FOOD SERVICE	Cold Storage Assembly	Serialized
FOOD SERVICE	Cold Storage Refrigeration System	Serialized
FOOD SERVICE	Dish Machine	Serialized
FOOD SERVICE	Display Refrigerator	Serialized
FOOD SERVICE	Exhaust Hood	Serialized
FOOD SERVICE	Fire Suppression System	Serialized
FOOD SERVICE	Food Chopper	Serialized
FOOD SERVICE	Fryer Battery	Serialized
FOOD SERVICE	Hand Sink	Serialized
FOOD SERVICE	Ice & Beverage Counter	Serialized
FOOD SERVICE	Ice Maker W/ Bin	Serialized
FOOD SERVICE	Pass-Thru Heated Cabinet	Serialized
FOOD SERVICE	Range	Serialized
FOOD SERVICE	Tea Brewer	Serialized
FOOD SERVICE	Tilt Braising Pan	Serialized
FOOD SERVICE	Waste Disposal	Serialized
FURNITURE	Auditorium Seating	Serialized
FURNITURE	Clocks [One Per Building]	Group
HVAC	Air Compressor	Serialized
HVAC	Air Dryer	Serialized
HVAC	Air Handler Unit	Serialized

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
HVAC	Air Handler Unit - Clean Room	Serialized
HVAC	Air Handler Unit - Elevator	Serialized
HVAC	Chilled Water Expansion Tank	Serialized
HVAC	Chilled Water Pump	Serialized
HVAC	Chilled Water Pump - Special Process	Serialized
HVAC	Chilled/Heating Water Isolation Valves	Serialized
HVAC	Chillers	Serialized
HVAC	Compressors	Serialized
HVAC	Condensate Return Units	Serialized
HVAC	Condenser Pump	Serialized
HVAC	Condensing Unit	Serialized
HVAC	Continuous / Variable Volume Boxes	Serialized
HVAC	Electronic Air Cleaner	Serialized
HVAC	Energy Recovery Unit	Serialized
HVAC	Evaporative Cooling Unit	Serialized
HVAC	Exhaust Fans	Serialized
HVAC	Expansion Tanks	Serialized
HVAC	Fan Coil Units / Blower Coil Units	Serialized
HVAC	Fan Supply - Ahu	Serialized
HVAC	Fresh Air Fans	Serialized
HVAC	Fresh Air Unit	Serialized
HVAC	Fume Hoods	Serialized
HVAC	Furnaces	Serialized
HVAC	Heat Exchangers - Misc	Serialized
HVAC	Heat Exchangers - Water	Serialized
HVAC	Heat Pump	Serialized
HVAC	Heat Recovery Unit	Serialized
HVAC	Heating Hot Water Pumps	Serialized
HVAC	Heating/Cooling Water Treatment Equipment & Tank	Serialized
HVAC	Humidity Control	Serialized
HVAC	HVAC Radiators	Serialized
HVAC	Incubators (Research)	Serialized
HVAC	Induction Unit	Serialized
HVAC	Misc Fans	Serialized
HVAC	Package Unit Air Conditioner	Serialized
HVAC	Packaged Terminal Units/ Wall Air Conditioner Unit	Serialized
HVAC	Return Air Fan - Ahu	Serialized
HVAC	Specialty Air Compressor	Serialized
HVAC	Unit Heater	Serialized
HVAC	Unit Heater	Serialized

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
HVAC - DISTRIBUTION	HVAC Manhole	Serialized
HVAC-CONTROLS	Control Dampers (Motorized)	Serialized
HVAC-CONTROLS	Controller Panel	Serialized
HVAC-CONTROLS	HVAC Control Valves (Motorized)	Serialized
HVAC-CONTROLS	Thermostat	Group
IRRIGATION	Irrigation	Serialized
IRRIGATION	Irrigation Backflow Preventer	Serialized
IRRIGATION	Irrigation Cisterns & Rainwater Collection With Filters	Serialized
IRRIGATION	Irrigation Flow Sensors	Serialized
IRRIGATION	Irrigation Meter	Serialized
IRRIGATION	Irrigation Pumps	Serialized
IRRIGATION	Irrigation Shut-Off Valves	Serialized
IRRIGATION	Irrigation System	Serialized
IRRIGATION	Irrigation Tanks	Serialized
MISC	Misc Manholes	Serialized
MISC	Misc Meters	Serialized
MISC	Misc Pumps	Serialized
PLANT	Boiler	Serialized
PLANT	Boiler Feedwater Pump	Serialized
PLANT	Chiller Compressor	Serialized
PLANT	Condensate Pumps	Serialized
PLANT	Cooling Tower	Serialized
PLANT	Cooling Tower Fan	Serialized
PLANT	Cooling Tower Pump	Serialized
PLANT	Generator	Serialized
PLANT	Heat Exchangers - Steam	Serialized
PLANT	Steam Isolation Valves	Serialized
PLANT	Steam Traps	Serialized
PLANT	Steam Water Heater	Serialized
PLUMB	Acid Tank	Serialized
PLUMB	Auxiliary Water Pump	Serialized
PLUMB	Backflow Preventor	Serialized
PLUMB	Chemical Pump	Serialized
PLUMB	Cisterns	Serialized
PLUMB	Deionized Water Pumps	Serialized
PLUMB	Domestic Cold Water Pump	Serialized
PLUMB	Domestic Hot Water Pump	Serialized
PLUMB	Domestic Water Isolation Valves	Serialized
PLUMB	Drinking Fountains & Water Coolers	Serialized
PLUMB	Faucet	Group
PLUMB	Floor Drain	Group

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
PLUMB	Flush Valves - Toilet	Group
PLUMB	Flush Valves - Urinal	Group
PLUMB	Fountains	Group
PLUMB	Gas Meter	Serialized
PLUMB	Gas Regulator	Serialized
PLUMB	Gas Systems	Serialized
PLUMB	Graywater System Equipment	Serialized
PLUMB	Grease Trap	Serialized
PLUMB	Heat Tracing / Anti-Freeze Controls	Serialized
PLUMB	Hot Water Circulation Pump	Serialized
PLUMB	Lift Station	Serialized
PLUMB	Manhole	Serialized
PLUMB	Misc Tank	Serialized
PLUMB	Oil & Separator Tanks	Serialized
PLUMB	Pressure Reducing Valves & Station	Serialized
PLUMB	Primary Roof Drain	Serialized
PLUMB	Reverse Osmosis Pumps	Serialized
PLUMB	Septic Tank	Serialized
PLUMB	Sump Pump	Serialized
PLUMB	Vacuum Pump	Serialized
PLUMB	Waste Ejector Pump	Serialized
PLUMB	Water Heater	Serialized
PLUMB	Water Meter	Serialized
PLUMB	Water Purification - Deionized	Serialized
PLUMB	Water Purification - Reverse Osmosis	Serialized
PLUMB	Water Softener	Serialized
ROOF	Gutters	Group
ROOF	Roof [One Per Type Per Building (Shingle Or Metal Or Foam Etc.)]	Group
ROOF	Roof Scuppers	Group
SAFETY	Carbon Monoxide Detector	Serialized
SAFETY	Emergency Eye Wash	Serialized
SAFETY	Emergency Shower	Serialized
SAFETY	Emergency Shower/Eye Wash Combo	Serialized
SAFETY	Misc. Emergency Equipment	Group
SECURITY	Access Control and Alarm Panel Included Input/Output Boards	Serialized
SECURITY	Access Reader	Serialized
SECURITY	Blue Lights & Phones	Serialized
SECURITY	Door Contact For Access Controlled Door	Serialized
SECURITY	Door Contact For Burg System	Serialized
SECURITY	Fixed Dome	Serialized
SECURITY	Security Panel	Group

SYSTEM	ASSET GROUP DESCRIPTION	TYPE
SITE	Exterior Art	Group
SITE	Exterior Signage [One Per Building]	Group
SITE	Fuel Tanks	Serialized
SITE	Lighting Poles	Group
SITE	Outside Lighting	Group
SITE	Trash Compactor	Serialized

*Filter Size = Length X Width X Depth (Count)

*Belt Size & Type = Width Type (A,B,C,D,E) - Belt Type (V, Kevlar V, Cogged V) - (Count)

*Water Filter Type = Manufacturer Filter Model

Table 02 - Equipment Attributes

System	Asset Group	Asset Description	Attributes
FOOD SERVICE	ICM	Ice Maker	water filter type
FOOD SERVICE	RU	Freezer	water filter type
FOOD SERVICE	RU	Refrigerator	water filter type
HVAC	ACU	Air Compressor	belt size & type
HVAC	ACU-S	Specialty Air Compressor	belt size & type
HVAC	ADY	Air Dryer	filter size
HVAC	AHU	Air Handler Unit	filter size
HVAC	AHU	Air Handler Unit	filter type
HVAC	AHU	Air Handler Unit	belt size & type
HVAC	AHU-CLR	Air Handler Unit - Clean Room	filter size
HVAC	AHU-CLR	Air Handler Unit - Clean Room	filter type
HVAC	AHU-ELV	Air Handler Unit - Elevator	filter type
HVAC	CMP	Compressors	filter type
HVAC	DXC	Condensing Unit	belt size & type
HVAC	DXC	Condensing Unit	compressor type
HVAC	DXP	Package Unit Air Conditioner	filter size
HVAC	FAN-EXH	Exhaust Fans	belt size & type
HVAC	FAN-FAF	Fresh Air Fans	belt size & type
HVAC	FAN-FUF	Fume Hoods	filter size
HVAC	FAN-RAF	Return Air Fan - AHU	filter size
HVAC	FAN-RAF	Return Air Fan - AHU	belt size & type
HVAC	FAN-SUP	Fan Supply - AHU	belt size & type
HVAC	FAU	Fresh Air Unit	filter size
HVAC	FCU	Fan Coil Units / Blower Coil Units	filter size
HVAC	FIL	Filters	belt size & type
HVAC	FIL-ELE	Electronic Air Cleaner	filter size
HVAC	FURN	Furnaces	filter size
HVAC	PTU	Packaged Terminal Units/ Wall Air Conditioner Unit	filter size
PLANT	CTW	Cooling Tower	belt size & type
PLANT	CTW	Cooling Tower	filter size
PLANT	FAN-CTW	Cooling Tower Fan	belt size & type
PLUMB	DFN	Drinking Fountains & Water Coolers	water filter type
PLUMB	PMP-DIW	Deionized Water Pumps	filter face velocity
PLUMB	PMP-DIW	Deionized Water Pumps	water filter type
PLUMB	PMP-ROW	Reverse Osmosis Pumps	filter face velocity
PLUMB	PMP-ROW	Reverse Osmosis Pumps	water filter type
PLUMB	WTR-DI	Water Purification - Deionized	water filter type
PLUMB	WTR-RO	Water Purification - Reverse Osmosis	filter size

Table 03 - Example Data Format**Space Information - Tab**

Number	Name	Floor	SF	BLD
100	LOBBY	1	141	SA1
101	FOOD PREP	1	364	SA1
102	DINING	1	451	SA1
103	IT	1	40	SA1
104	UNISEX	1	75	SA1
105	MENS	1	288	SA1
106	WOMENS	1	289	SA1
110	MECHANICAL	1	292	SA1
111	STAIR	1	81	SA1
112	OFFICE	1	81	SA1
113	CUSTODIAL	1	257	SA1
114	OFFICE	1	96	SA1
115	OFFICE	1	96	SA1
116	OFFICE	1	96	SA1
117	OFFICE	1	159	SA1

Contact Information - Tab

Email	Company Name	Website	Phone Number
info@CUMMINSPOWERGENERATION.com	CUMMINS POWER	www.CUMMINSPOWERGENERATION.com	123-456-7890
info@YORK.com	YORK	www.YORK.com	123-456-7890
info@JOHNSONCONTROLS.com	JOHNSON CONTROLS	www.JOHNSONCONTROLS.com	123-456-7890
info@PENTAIR.com	PENTAIR	www.PENTAIR.com	123-456-7890
info@RECOUSA.com	RECOUSA	www.RECOUSA.com	123-456-7890
info@GENERALELECTRIC.com	GENERAL ELECTRIC	www.GENERALELECTRIC.com	123-456-7890
info@MARATHON.com	MARATHON	www.MARATHON.COM	123-456-7890

Table 03 - Example Data Format

Equipment Information – Tab (Transposed for Easier Viewing Only)

Name	AHU-1	FPB-10	CHWP-1
Location	146	101	146
Description	Air Handling Unit	Fan Powered VAV	Pump
Asset Group	AHU	FPB	PUMP
Installer	TD INDUSTRIES	TD INDUSTRIES	TD INDUSTRIES
Manufacturer	YORK	JOHNSON CONTROLS	PENTAIR
Model	ITF-BD20	GVL-OP-42	ES-6000-V
Expected Life	15 YEARS	5 YEARS	10 YEARS
Cost	26,000	2,000	5,500
Warranty Term	5 YEARS	1 YEAR	1 YEAR
Submittals	23 73 14.001.0 AHU's (PD-SD) 2012-2-3.pdf	23 36 00.001.0 Air Terminal Units (PD) 2012-1-27.pdf	23 73 14.001.0 AHU's (PD-SD) 2012-2-3.pdf
IOM	OM-32 - HVAC-Air Handler Unit_1).pdf	OM-Air Terminal Units.pdf	OM-Chilled Water Pumps.pdf
Serial	FCJ121004-01	700120-12	2122403934
NamePlate Photo	AHU-1NP.jpg	FPB-10NP.jpg	CHWP-1NP.jpg
Equipment Photo	AHU-1.jpg	FPB-10.jpg	CHWP-1.jpg
Maintenance Files	AHU-maintenance.pdf	FPB-maintenance.pdf	pump-maintenance.pdf
Cx Files	Cx-32 - HVAC-(Air Handler Unit_1).pdf	Cx-Air Terminal Units.pdf	Cx-Chilled Water Pumps.pdf
Warranty File	War-32 - HVAC-(Air Handler Unit_1).pdf	War-Air Terminal Units.pdf	War-Chilled Water Pumps.pdf
Elec Parent	N1L1	N1L3	N1LDPK1
HVAC Parent		AHU-1	
Support Locations	100, 101, 102, 103, 104, 105, 106, 110,111, 112, 113, 114, 115, 116, 117	102	
Attributes1	air filter: Pleated 24x24x4 (9)		
Attributes1	supply fan belt: C40 V-Belt (2)	fan belt: n/a (direct drive)	