



# **USAF Built Infrastructure Inventory and Assessments Manual**

## ***Appendix for Facility Electrical (D50)***

July 2017

This document includes information that shall not be disclosed outside the Government and shall not be duplicated, used or disclosed-in whole or in part-for any other purpose than the United States Air Force Built Infrastructure Assessment Program.

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## I. Overview

This manual covers the inventory and assessment process for the “Electrical (D50)” system and components. This is an abbreviated manual and does not contain the same level of detail found in expanded manuals. Please see the Sustainment Management System (SMS) Playbook for additional information including:

- BUILDER™ Sustainment Management System Concepts
- Overview of ASTM E 1557 UNIFORMAT II Standard Classification for BUILDER™
- BUILDER™ Inventory Overview
- BUILDER™ Assessment Overview
- BUILDER™ Remote Entry Database (BRED™)
- Working with Web-Based BUILDER™
- Quality Assurance
- Site Visit Preparation and Execution
- Site Visit Safety

### A. D50 Electrical Description

#### 1. UNIFORMAT II definition

- The electrical system of a building distributes and safely energizes building Component Sections or installed equipment from the secondary side of the primary transformer to the building support functions and systems.

#### 2. Major components

- Electrical Service & Distribution (D5010): This subsystem provides for electrical devices that are required to deliver electricity from the primary service distribution transformer to subpanels or equipment. These components include service entrance conductors and conduit (service entrance equipment), main distribution panel, switchgear, switchboards, branch circuit panels, motor control centers, as well as conduit and wiring to circuit panels.
- Lighting & Branch Wiring (D5020): This subsystem provides for lighting and branch wiring systems including conduit and wiring from circuit panels to point of service, light fixtures, light switches, receptacles and devices. These components include all types of interior and exterior lighting fixtures including exit lights.
- Communications & Security (D5030): This subsystem includes communication devices and alarm protection systems and is not used by the USAF. Fire alarm system components are to be inventoried and assessed in D40.
- Other Electrical Services (D5090): This subsystem includes emergency generators, uninterruptible power systems (UPS), transfer switches and emergency lighting. UPSs are considered equipment in the USAF and are not inventoried and assessed.

#### 3. Life cycle characteristics

- Electrical systems and components provide reliable service when properly installed, serviced and maintained. These systems have a service life of 30- 50 years and components can remain in service beyond 50 years. These systems and components show relatively slow rates of deterioration, but can accelerate if problems such as improper service/connections, overloading, corrosion, moisture damage, etc. are not

addressed in a timely manner. Electrical system components are generally assessed using the Direct Condition Rating (DCR) Definitions chart considering observed defects.

One of the most common problems with building electrical services systems is electrical modifications not complying with the National Electrical Code (NFPA 70) or the National Electrical Safety Code (NFPA 70E). Consideration of environments (i.e., coastal) may also help with maintaining a safe and properly operating electrical service.

## II. Inventory

### A. General D50 Inventory Guidance

This section presents common UNIFORMAT II D50 Electrical Inventory Component Sections found across USAF installations as a guide for entering into the BUILDER™ SMS or BRED™ software. Inventory items are arranged by BUILDER™ SMS system with Equipment Category, Component Subtype, Quantity and Inventory Notes. Each building's full or partial inventory can be captured in the field using the Inventory/Assessment Data Collection Sheet(s) included in Section V and in the AFCEC BUILDER™ SharePoint Site Documents Library. Section VI (D50 UNIFORMAT II Minimum Component Reference Table) provides a complete listing of the minimum components inventoried and assessed for D50. Bases may elect to inventory and assess additional components.

***NOTE: Bases may elect to inventory and assess other facility electrical Component Sections. Inventory and assessment is required by the current AFCAMP Playbook as project support documentation for consideration in the project prioritization process.***

Component Subtypes General, Other, and Unknown require a Section Name to further describe the Component Sections.

It is critical to confirm the year installed (facility acceptance year default from Real Property Assets Database (RPAD)) or to estimate the year installed. BUILDER™ SMS uses the Install Date, life cycle degradation curves and assessment observations to establish Condition Index (CI) for each Component Section. If the assessor suspects the RPAD default date is not accurate or an addition or renovation has taken place, check the RPAD record for year renovated or check local as-built or renovation drawings to help determine the year installed. Most switchgear, panelboards, transformers, etc. will have the manufactured year on a data plate. Estimated Install Dates decrease the Expected Service Life significantly. Every effort should be made to establish an Install Date and avoid the use of estimated.

If this is an initial assessment and no electrical inventory has previously been entered into BUILDER™ SMS, an inventory is required. Most electrical components inventoried for USAF buildings are visible with the exception of facility wiring. When electrical components are not visible (or an area of the building is not accessible), as-built drawings should be used to identify and quantify the electrical components. If as-built drawings are not available, the assessor may use experience to make an assumption for the electrical component types and quantities based on similar construction, consultation with local staff and other resources such as <http://www.inspectapedia.com>. Often manufacturer websites will have extensive product information available which can help the assessor determine age, equipment type, capacity and/model (e.g. <http://www.geindustrial.com>).

The remainder of this section provides photo examples of the most common USAF electrical inventory items categorized by major components and accompanied with appropriate Equipment Category,

Component Subtype, and Quantity from the BRED™ drop down menus. This information is supplemented with general and specific inventory notes as a guide for data entry by the assessor.

General Electrical D50 Inventory Hints

- If safely accessible be sure to enter the building electrical room to obtain service information and identify main panels and electrical equipment.
- Do not inventory specialty power equipment such as converters, regulators, etc. associated with the building mission or process equipment.
- Do not inventory individual disconnects associated with building mission or process equipment (e.g. food service equipment, etc.).
- Quantity for lighting fixtures refers to number of fixtures, not lamps.
- Inventory Comments should be recorded to clarify inventory component description if Section Name is insufficient.

## **B. Inventory D5010 Electrical Service & Distribution Sections**

Electrical service and distribution Component Section inventory for the USAF includes service entrance conduit and conductors (service entrance equipment); panelboards; switchgear; switchboards; interior distribution transformers; motor control centers; interior capacitance banks; and building generators and associated transfer switches, if authorized.

Recommend inventorying “named” components (e.g. LT-2, P-3, T-4, etc.) as individual Component Sections. A Component Section may have multiple components of the same voltage/ampere rating (Component Subtype) and Year Installed but list the component names in the Section Details.

**Do not use Custom field to describe components. If the drop boxes do not have listed the specific size component needed, give an adequate description in the Section Name, Inventory Comments or Section Details. If the drop box does not have the specific size, select a size from the drop box either smaller or larger similar in cost.**

Typical electrical and distribution components on USAF bases are:

1. Equipment Category: D501003 Interior Distribution Transformers

Component Subtype: dry-type, 480V primary  
120/208V secondary, 45kVA

Quantity: EA      Year Installed: Data plate

Inventory Notes:

- Include transformer name & description in Section Name: XFMR T3 480/208V 45 kVA
- Data plate typically on front of transformer
- Collect make, model, and serial number to enter in Section Details, optional



2. Equipment Category: D501006 Motor Control Centers

Component Subtype: Size in HP and height

Quantity: EA      Year Installed: Data plate

Inventory Notes:

- Found in buildings with pumps or equipment
- Include MCC name in Section Name: MCC 1
- If desired, collect make, model, serial, and capacity (amps) to enter in Section Details



3. Equipment Category: D501004 Panelboards

Component Subtype: Main lugs, 120/208V, 100 amp, NQOD

Quantity: EA      Year Installed: Data plate

Inventory Notes:

- Inventory by design capacity not main breaker size
- Capacity on label on outside or inside of door
- Include panel name in Section Name: Panel G1 208/120V\_225A (sizes limited in drop box)



4. Equipment Category: D501004 Panelboards

Component Subtype: Safety Switch (capacity)

Quantity: EA      Year Installed: Data Plate

Inventory Notes:

- Do not open, capacity found on front label
- Section by size, typically 30, 60, 100, 400 AMP
- Maybe located on roof for HVAC equipment
- Inventory is optional



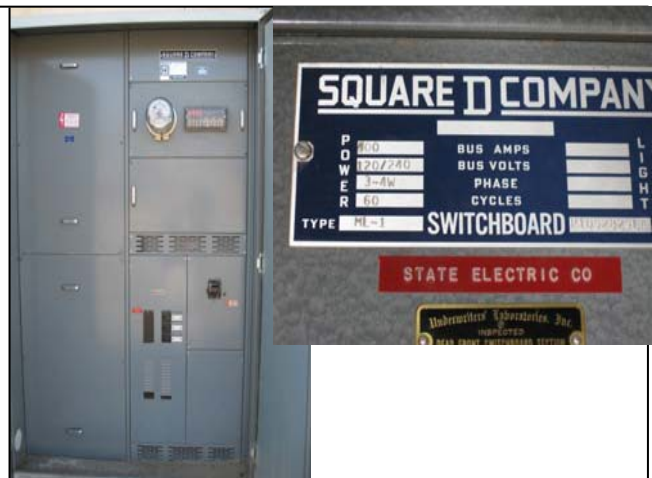
5. Equipment Category: D501004 Panelboards

Component Subtype: Switchgear - 400 Amp

Quantity: EA      Year Installed: Data plate

Inventory Notes:

- Normally associated with large buildings, typically located in main electrical room
- Do not open, capacity found on data plate
- If desired, collect make, model and serial number for Section Details
- Section Name: MDP\_400A



6. Equipment Category: D501004 Panelboards

Component Subtype: Switchgear – 1200 Amp

Quantity: EA      Year Installed: Data plate

Inventory Notes:

- Less common than Switchboards
- Normally associated with large buildings and specialized electrical needs
- Do not open, capacity found on data plate or main breaker
- If desired, collect make, model and serial number for section details
- Section Name: MDP 1\_1200A



### C. Inventory D5020 Lighting & Branch Wiring Sections

Lighting and branch wiring Component Section inventory for the USAF includes distribution conduit and



wiring from panelboards to points of service, and all interior and exterior lighting. Typical electrical lighting components on USAF bases are:

1. Equipment Category: D502001 Branch Wiring

Component Sub type: General

Quantity: SF              Year Installed: RPAD

Inventory Notes:

- Use for building interior conduit/wiring system
- Section Name: Wiring
- Section Name required
- Not generally observable
- If observable, assess based on conduit condition



2. Equipment Category: D502002 Lighting Equipment

Component Subtype: Interior Lighting, Incandescent

Quantity: EA              Year Installed: Estimated

Inventory Notes:

- If Exterior, precede Section Name with EXT
- Explosion proof photo to far right, precede Section Name with XP
- Incandescent fixtures with screw in compact fluorescent lamps are counted as incandescent
- Include in Section Name: Mounting, lamp type, number lamps, lamp wattage:
  - CM\_CFL\_1L\_23W (ceiling mount)
  - RC\_INC\_1L-65W (recessed can)
  - WM\_INC\_4L\_40W (wall mount)





3. Equipment Category: D502002 Lighting Equipment

Component Subtype: Interior Lighting, FL-2 Lamp  
T8 Quantity: EA Year Installed: Estimated

Inventory Notes:

- Select by # of lamps and tube size
- T5, T8, T12 refers to an X/8 tube diameter, e.g. T5 = 5/8", T8 = 8/8" or 1", etc.
- Do not differentiate between recess (troffers), ceiling hung, or surface mount
- May also be Exterior or Explosion Proof
- Include in Section Name: Length, number lamps, type, lamp wattage:
  - 4F\_2L\_T8\_28W
  - 8F\_2L\_T12\_60W
  - 4F\_6L\_T5HO\_54W



4. Equipment Category: D502002 Lighting Equipment

Component Subtype: Interior Lighting, FL-2 Lamp  
T8

Quantity: EA Year Installed: Estimated

Inventory Notes:

- Similar to above, except U-shape tube
- Quantity refers to number of fixtures, not number of lamps
- Put "U" in Section Name:
  - 2F\_2L\_T8U\_28W



5. Equipment Category: D502002 Lighting Equipment

Component Subtype: Interior Lighting, Fluorescent

Quantity: EA Year Installed: Estimated

Inventory Notes:

- Typically found in newer “can lights”, will have a pin-type connection
- May be 1-LAMP
- Can be difficult to see, used in many newer wall mount, sconce or recessed can fixtures
- Describe in Section Name: Ext\_RC\_CFL-P\_2L\_13W
- CFL-P denotes a “pin” connection



6. Equipment Category: D502002 Lighting Equipment

Component Subtype: Exterior – Metal halide, wall pack, 250W

Quantity: EA Year Installed: Estimated

Inventory Notes:

- Select appropriate lamp types – metal halide, quartz, incandescent, high pressure sodium, LED
- Typically found on exterior of building as security lighting or wall wash
- Not all available lamp sizes in drop box
- Describe in Section Name: WM\_HID\_MH\_250W



7. Equipment Category: D502002 Lighting Equipment

Component Subtype: Exterior Lighting


Quantity: EA Year Installed: Estimated

Inventory Notes:

- Exterior walkway lights typical in newer buildings such as MWR, Family Support, dormitories, etc. - optional
- Inventory/assessment is optional
- Describe in Section Name
- Do not count street or parking lot lights – considered utility



<p>8. Equipment Category: D502002 Lighting Equipment</p> <p>Component Subtype: Explosion Proof Lighting - Fluorescent, ceiling mounted, 2-40W</p> <p>Quantity: EA      Year Installed: Estimated</p> <p>Inventory Notes:</p> <ul style="list-style-type: none"> <li>• Typically found in industrial buildings with explosive gases or munitions</li> <li>• Can be identified by threaded conduit and enclosed fixtures and switches</li> <li>• Note explosion proof fittings in conduit</li> <li>• Describe in Section Name: EXP_4F_2L_T12_40W</li> </ul>	
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<p>9. Equipment Category: D502002 Lighting Equipment</p> <p>Component Subtype: Exit Lighting</p> <p>Quantity: EA      Year Installed: Estimated</p> <p>Inventory Notes:</p> <ul style="list-style-type: none"> <li>• May be 1 or 2 sided, LED, Battery back-up (BU)</li> <li>• Combination Emergency and Exit Light units are becoming more common</li> <li>• Describe in Section Name if combination Exit/ Emergency Light unit: <ul style="list-style-type: none"> <li>• Exit_Combo_NICAD_2L_LED</li> </ul> </li> </ul>	
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## D. Inventory D5090 Other Electrical Services Sections

Other electrical services Component Sections inventory for the USAF includes emergency lighting, emergency generators and associated transfer switches, if authorized. Uninterruptible power supplies (UPS) and 400 Hz convertors and generators are considered equipment and are not inventoried. Electric heating systems, grounding systems, counterpoise systems and lightning protection systems are not on the minimum inventoried component list. Typical other electrical systems components on USAF bases are:

1. Equipment Category: D509002 Emergency Lighting & Power

Component Subtype: Emergency Lighting – Nickel cadmium battery, twin sealed beam

Quantity: EA Year Installed: Estimated

Inventory Notes:

- Newer 1990's fixture to left
- Older 1980's fixture to right
- Lamps may be Sealed Beam, Halogen, or LED
- Batteries may be nickel cadmium or lead acid
- Describe in Section Name:
  - EMERLTS\_NICAD\_2L\_SB
  - EMERLTS\_LEAD\_2L\_SB



2. Equipment Category: D509002 Emergency Lighting & Power


Component Subtype: Generators – Diesel, 175kW

Quantity: EA Year Installed: Data plate

Inventory Notes:

- If desired, collect make, model, serial number for section details
- Section Name: EMER GEN 2 \_175KW
- Fuel may be diesel, LPG, or gasoline



<p>3. Equipment Category: D501004 Panelboards</p> <p>Component Subtype: Transfer Switch - Automatic, 400 amp</p> <p>Quantity: EA      Year Installed: Data plate</p> <p>Inventory Notes:</p> <ul style="list-style-type: none"> <li>• Associated with emergency generator</li> <li>• Inventoried under Electrical Service &amp; Distribution</li> <li>• Maybe located inside or outside - Do not open</li> <li>• If desired, collect make, model, and serial number for section details</li> <li>• Menu also includes Manual Transfer Switch</li> <li>• Note if 3-Pole (Requires upgrade to 4-Pole by ETL) - assess as "Amber"</li> <li>• Describe in Section Name: ATS_480V-3 pole_225-400A</li> </ul>	
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### III. Assessment

#### A. General D50 Assessment Guidance

Electrical Component Sections are assessed using Direct Condition Rating (DCR). Most electrical Component Sections will be visible. When Component Sections are not visible, assessment is based on operability. If operability cannot be determined, no assessment is required and an Age-Based Rating is given by BUILDER™ SMS. In this case, BUILDER™ SMS will use the inventory, Year Installed and life cycle degradation curves built-in to the software to establish the CI. **The BUILDER™ SMS program will refresh the Year Installed for electrical sections every 20 years. The assessor should adjust this date to the actual or estimated date installed.**

When electrical Component Sections are visible, they should be assessed. The on-site assessment is determined based on the assessor's observations compared to the Direct Condition Rating (DCR) Definitions chart (see next page) for major components D5010, D5020, D5030 and D5090. The "Rating" reflects observed deterioration, impact on operability and repair requirements based on the chart and the assessor's professional judgment. When determining the "Rating," the assessor should consider the quantity and severity of conditions or distresses observed.

If an otherwise operational component cannot be maintained in the future due to the non-availability of repair parts, the component should be rated no higher than "Amber+."

**Under no circumstances should age be factored into a DCR or Distress Survey assessment. Ratings are based on condition, operability and/or survivability only. BUILDER™ SMS already factors in the age when BUILDER™ SMS calculates Condition Index (CI).**



The following conditions or events can accelerate electrical component deterioration and should be considered by the assessor:

- Improper construction or installation (Assessor must consider the National Electrical Code (NEC) applicable at time of construction)
- Damage or misuse
- Improper additional circuits or alterations
- Corrosion (often related to weather exposure and/or coastal environment)
- Lack of preventive maintenance
- Overloading or power surges

NOTE: Red highlighted text is provided as an example of a life cycle of typical components and should be adjusted as needed to represent other various components.

Direct Condition Rating (DCR) Definitions	
Rating	Observation
Green (+)	Fully Operational - Free of Known or Observable Defects Keep doing PM required to maintain warranty - no action required
Green	Fully Operational - Slight Deterioration or Minimal wear Keep doing PM - no action required
Green (-)	Fully Operational – Normal wear and/or serviceability defects Keep doing PM - need to start planning for rehabilitation
Amber (+)	Reduced Operation – Minor wear and/or serviceability defects Repairs could be accomplished and replacement planned within next eight to ten years (Investment of resources could extend life)
Amber	Reduced Operation – Moderate wear and/or serviceability defects Repairs could be accomplished and replacement planned within next six to seven years (Investment of resources could extend life)
Amber (-)	Reduced Operation – Significant wear and/or serviceability defects Repairs could be accomplished and replacement planned within next three to five years (Investment of resources could extend life)
Red (+)	Loss of Operation – Moderate wear and/or serviceability failure Repairs could be accomplished and replacement planned within next two years (Run to failure - further investment unwise)
Red	Loss of Operation – Significant wear and/or serviceability failure Repairs could be accomplished and replacement planned within the next year (Run to failure - further investment unwise)
Red (-)	Loss of Operation – Complete wear and/or serviceability failure Replacement needs to be planned immediately

Below are assessment hint questions to help the assessor determine the most appropriate DCR.

D50 Assessment Hint Questions

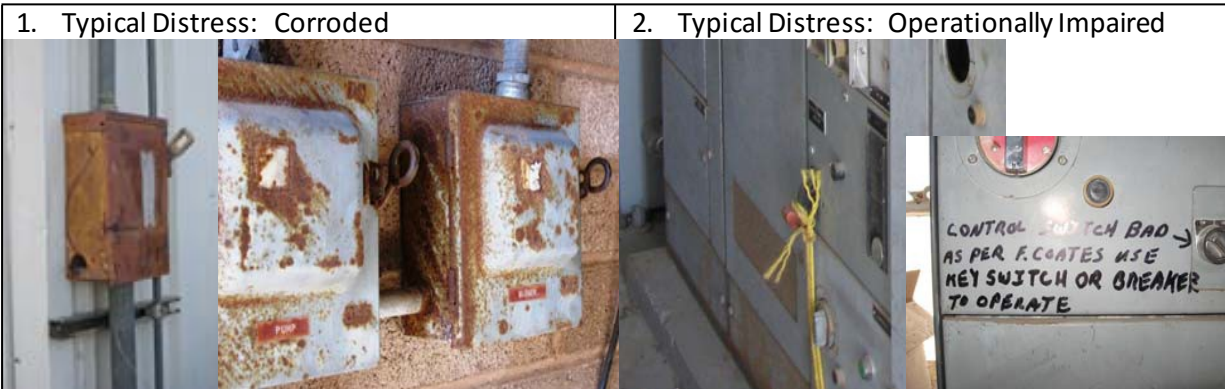
- What distresses or problems are observed?
- What is the quantity and severity of the distresses?
- Is the electrical system/component operating properly?
- Will repairs preserve or extend the remaining service life of the electrical component?

Based on above:

- Select a DCR from the chart.
- If assessment rating is **Amber+** or below, enter an Inspection Comment to describe the reason. Photograph documentation is required to be attached to the assessment. An Inspection Comment should also be entered regardless of DCR, if a significant localized issue needs to be highlighted, which may not necessarily impact the overall Component Section DCR.

**B. Assessment D5010 Electrical Service and Distribution**

Examples of typical electrical service and distribution distresses or conditions include:





3. Typical Distress: Damaged & Moisture Exposure



4. Typical Distress: Improper Wiring



5. Typical Distress: Modified Panel, Exposed Wiring



6. Typical Distress: Exposed Bus Bars



7. Typical Distress: Arc Faulting 440V Receptacle



8. Typical Distress: Corroded MDP



9. Typical Distress: Missing Panel Cover



10. Typical Distress: NFPA 70 - Inadequate Working Space Clearance



11. Typical Distress: Code Violation – Panel & Non-GFCI Outlet at Sink and for Water Cooler



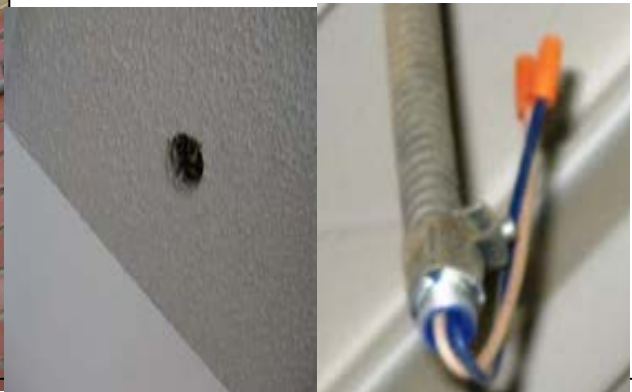
### C. Assessment D5020 Lighting and Branch Wiring

Examples of typical lighting and branch wiring distresses or conditions include:

1. Typical Distress: Stained Lens (Exterior)



2. Typical Distress: Missing Light Fixtures, Exposed Wires



3. Typical Distress: Non-Compliant Sign, Locally Made, No Power Source



4. Typical Distress: Missing Exit Sign Face



5. Typical Distress: Exit Sign with Exposed Wiring



6. Typical Distress: Exit Sign with no Door – Door Planned for Future





7. Typical Distress: Exposed Wiring on Exterior Wall



8. Typical Distress: NEC Art 400 Violation – Portable Cord Used as Permanent



9. Typical Distress: NEC Art 400 Violation – Portable Cord Used as Permanent



10. Typical Distress: Surface Mounted Electrical Wiring not in Conduit



11. Typical Distress: Missing Lens, Corroded



#### **D. Assessment D5090 Other Electrical Services**

Examples of typical other electrical system distresses and conditions include:

1. Typical Distress: Emergency Egress Light Remains on after Testing	2. Typical Distress: Non-Functioning Emergency Egress Light
	
3. Typical Distress: Animal/Insect Damage	
	

## IV. Inventory and Assessment Rules of Thumb

### A. Assessor Qualifications

- The assessor should have 5+ years of experience with building power electrical systems and knowledge of current electrical safety practices and be equivalent to a Journeyman, a V Level Technician or Electrical Engineer. The assessor should be able to identify common electrical system components, understand how they function/operate and have experience planning or performing electrical maintenance, improvements, or repairs.

### B. Year Installed

- In some cases, electrical sections may be replaced as an individual repair or partial replacement. These areas would have a different age. The RPAD construction and

renovation dates should be confirmed, if they are not appropriate, the component age must be estimated. The building occupants or other facilities staff may be able to provide some information.

- Additions, new wings, or major renovations likely require identifying a separate section with a different age.
- Past assessors have developed the below list manufacture dates for commonly found electrical items that can be used to estimate age. These items were probably put in service after date shown below:

- T-12 Fluorescent Light Fixture 1975
- T-8 Fluorescent Light Fixture 1981
- T-5 Fluorescent Light Fixture 1995 (Uses a mini bi-pin base - cannot be used in a T-12 or T-8 fixture)
- Compact Fluorescent (CFL) 1995
- High Intensity Discharge (HID) 1995
- Emergency Light 1982

### C. Inventory/Assessment

- Typical section names used to describe the major areas of the building include: 1FL, 2FL, BASEMENT, MEZZANINE, ROOF, WING "X", etc.
- Typical Section Names used to describe electrical components should be consistent. Section Names should adequately identify the component inventoried. BUILDER™ SMS dropdown boxes do not have a complete listing of all component sizes available:
  - For Panelboards enter Section Name: Panel "xxx" \_ "xxx/xxx"V \_ "xxx" A
  - For Interior Transformers enter Section Name: XFMR "xx" \_ "xxx/xxx"V \_ "xxx" KVA
  - For Main Distribution Panels enter Section Name: MDP "xx" \_ "xxx" A
- Since dropdown boxes have limited sizes, describe actual size in Section Name and select the next greater size from the dropdown boxes. Avoid using "other." This will allow BUILDER™ SMS to effectively use all built in processes.
- D5010 – Service Entrance Equipment - Electrical Service and D5020 - Branch Wiring (entered with quantity in square feet) are almost always age-based because the conduit and wiring cannot be directly assessed. Therefore, DCR assessment, if operable, is entered as "Green." Exception: If the assessor has other information such as an engineering study, scope of work or occupant complaints indicating electrical problems, the assessor can use professional judgment to select a DCR. A Inspection Comment should be provided in these cases.
- The D50 items noted below, included in BUILDER™ SMS dropdowns, are not part of the Minimum Component List and typically are not inventoried or assessed but may at the local base's option:
  - D5010 – Power Converters and Regulators (normally associated with the mission or process vs. the building)
  - D5010 – Main Transformers (considered distribution and inventoried/assessed as a Utility)
  - D5010 – Safety Switches, Enclosed Circuit Breakers and Capacitor Banks
  - D5030 - All – Owned by Communications Squadron
  - D5090 – Grounding, Grounding points, Lightning protection, Electric Heating

- and EMCS
  - D5090 – UPS is equipment
- In buildings with repetitive floor plans (e.g. VOQs, TLFs, dormitories), the assessor may use judgment and inventory and assess a representative sample of each room type and section, then estimate the quantity of repetitive items such as lights.

## V. Inventory/Assessment Data Collection Sheets

The following data collection forms are included as a recommendation and may be found in the AFCEC BUILDER™ SharePoint Site Documents Library. Many assessors also use floor plans or a notebook. Use whatever collection method works best for the individual assessor.

(See Next 3 Pages)

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[illegible]

## Lighting Worksheet

[illegible]

## Electrical Power Worksheet

[illegible]

## VI. D50 Unifomat Minimum Component Reference Table

The following table provides SMS MINIMUM inventory and condition assessment requirements. The table effectively provides a list of WHAT will be inventoried, WHERE within the SMS the component inventory will reside and HOW a component is to be condition assessed. The structure of the list is within UNIFORMAT II to be consistent with BUILDER™ SMS. Currently, all components are Direct Condition Rating assessed. Eventually, Distress Survey assessments may be conducted on selective components.

PM Inspection/Testing Directive column gives information on any Air Force applicable publication providing Preventative Maintenance (PM) actions that, once conducted, provides information on a component's condition assessment. Preventive Maintenance Task Lists (PMTLs) or other inspections may be considered a Distress Survey type assessment in the future for some components.

Condition assessment frequency is not to exceed 5 years. Condition assessments conducted as part of a PMTL may be entered into SMS but should not be more often than an annual assessment.

AMP reflect the AMP to which the component is assigned:

F: Facility AMP

(See Next Page)

D	SERVICES				DEFINITION						
Unf L1	Unf L2	Unf L3	WBS L4		Includes all methods of conveying, plumbing, HVAC, fire protection, and electrical.	In Builder/ Fueller/ Paver/ Railer/ Utility	PM Inspection/ Testing Directive	Insp/ Assess Freq	SMS Type Insp	Assessment Method	AMP/ Sub-AMP
	D50	ELECTRICAL			This system is defined by the electric current used or regarded as a source of power.						
		D5010	ELECTRICAL SERVICE & DISTRIBUTION		This subsystem provides for all electrical devices that are required to deliver the main source of power to the facility and to distribute this power to subpanels.						
			D501002	SERVICE ENTRANCE EQUIPMENT	This includes the protection equipment and metering devices for main distribution. Assemblies include main distribution panel, separate enclosed circuit breakers (optional), fuses (optional), and meters (optional). Includes service entrance conductors from the secondary taps of the distribution transformer to the main	B	PMTL D5015 210 1950 01/02/03 Distribution Panelboard	3,6 yr	Direct	Visual or as per PMTL	F/E
			D501003	INTERIOR DISTRIBUTION TRANSFORMERS	Transformers fed downstream of the service entrance equipment. Assemblies include transformers, conduit, conduit support, and wire.	B	N/A	5 yrs	Direct	Visual	F/E
			D501004	PANELBOARDS	Branch circuit panelboards. Assemblies include panelboards, breakers, conduit, and wire.	B	PMTL D5015 260 1950 01 Electrical Subpanels	3,6 yr	Direct	Visual or as per PMTL	F/E
			D501005	ENCLOSED CIRCUIT BREAKERS	Over-current protection device enclosed in its own housing. Assemblies include enclosed circuit breaker, conduit, and wire. Inventory is optional.	B	N/A	5 yr	Direct	Visual	F/E
			D501006	MOTOR CONTROL CENTERS	This is a cabinet in which motor starters and operation devices are contained. Assemblies include the motor control center cabinet, motor starters, contacts, switches, conduit, wire, and all associated items.	B	N/A	5 yr	Direct	Visual	F/E
		D5020	LIGHTING & BRANCH WIRING		Lighting systems including light fixtures and devices, i.e., switches, receptacles, and equipment connections.						
			D502001	BRANCH WIRING	This assembly includes switches, receptacles, equipment connections, conduit, and wire. (Use Facility Square Footage)	B	N/A	None	None, Age Based	None	F/E
			D502002	LIGHTING EQUIPMENT	This assembly includes fixtures, mounting, lamps (type and wattage), conduit, wire, and switching devices. Includes interior and exterior (attached to facility).	B	N/A	5 yr	Direct	Visual	F/E
		D5090	OTHER ELECTRICAL		Systems not described in System D5030.						
			D509002	EMERGENCY LIGHTING & POWER	Assemblies include fixtures, motors used for power generation, connection and testing, transfer switches, conduit, wire, battery chargers, batteries, and solar panels.						
				Emergency Lighting	Lighting providing illumination for a pathway to emergency exit a facility in event of failed electrical power.	B	NFPA Life Safety 101 Codes	5 yr	Direct	Visual	F/E
				Exit Lights	Identify code required ingress/egress paths.	B	NFPA Life Safety 101 Codes	5 yr	Direct	Visual	F/E
				Automatic Transfer Switch (ATS)	An ATS normally selects the primary or normal source of power to a facility or system but selects power from an emergency source when the primary or normal source of power is interrupted.	B	PMTL - D5095	A	Direct	Visual or as per PMTL	F/E
				Diesel Generator	An emergency generator providing electrical power to a facility or system in the event the primary or normal source of power is interrupted.	B	PMTL D5015 234 1950 01 - ATS; D5095 210 2950 01/ 02/03/04/05 - Generators	A	Direct/ Function	Visual or as per PMTL	F/E