



USAF Built Infrastructure Inventory and Assessments Manual

Appendix for Conveying Systems (D10)

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.

Table of Contents

I. Overview.....	3
A. D10 Conveying Systems Description.....	3
1. UNIFORMAT II definition.....	3
2. Major components.....	3
3. Lifecycle characteristics.....	3
II. Inventory.....	3
A. General D10 Inventory Guidance.....	3
B. Inventory D1010 Elevators & Lifts.....	4
C. Inventory D1020 Escalators & Moving Walks.....	5
D. Inventory D1090 Other Conveying Systems.....	5
III. Assessment.....	6
A. General D10 Assessment Guidance.....	6
B. Assessment D1010 Elevators & Lifts.....	8
C. Assessment D1020 Escalators & Moving Walks.....	8
D. Assessment D1090 Other Conveying Systems.....	8
IV. Inventory and Assessment Rules of Thumb.....	8
A. Assessor Qualifications.....	8
B. Year Installed.....	9
C. Inventory/Assessment.....	9
V. Inventory/Assessment Data Collection Sheet.....	9

I. Overview

This manual covers the inventory and assessment process for the building “Conveying Systems (D10)” building system and components. This is an abbreviated manual and does not contain the same level of detail found in expanded manuals. Please see the 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. D10 Conveying Systems Description

1. UNIFORMAT II definition

- Conveying Systems are automated or manual systems that provide vertical or horizontal personnel, equipment or material movement. Systems include elevators, accessibility lifts, escalators, chutes or built-cranes/hoists.

2. Major components

- Elevators & Lifts (D1010) – Includes personnel elevators, freight elevators and accessibility lifts.
- Escalators & Moving Walks (D1020) – Includes escalators used to move personnel vertically and moving walkways used to move horizontally.
- Other Conveying Systems (D1090) – Includes built-in material lifting devices such as jib booms, double beam cranes and dumbwaiters, as well as chutes (linen, refuse, etc.).

3. Lifecycle characteristics

- Conveying System components are generally built-in items with operating or moveable parts that require routine inspection, preventive maintenance and service. These items are typically short-lived components that can show accelerated deterioration if not properly maintained or used inappropriately.

II. Inventory

A. General D10 Inventory Guidance

This section presents common UNIFORMAT II D10 Conveying Systems 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 Field Data Sheet(s) included in Section V and in the AFCEC BUILDER SharePoint Site Documents Library.

NOTE: Currently, there are no minimum components inventoried and assessed for BUILDER™ SMS inventory for D10 for the USAF. Bases may elect to inventory and assess conveying system components. 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 (default from Real Property Assets Database (RPAD)), or estimate the year installed. BUILDER™ SMS uses the Install Date, life cycle degradation curves and assessment observations to establish a 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. Estimated Install Dates decrease the Expected Service Life significantly.

If this is an initial assessment and no Conveying Systems inventory has previously been entered into BUILDER™ SMS, an inventory is required. When conveying systems are not fully visible (such as chutes), as-built drawings should be used to identify and quantify the conveying components. If as-built drawings are not available, the assessor may use experience to make an assumption for the conveying system and quantities based on similar systems, consultation with local staff and other resources such as www.inspectapedia.com.

B. Inventory D1010 Elevators & Lifts

Typical inventory at USAF bases includes the following component types:

- Electric Freight EA
- Electric Passenger EA
- Hydraulic Freight EA
- Hydraulic Passenger EA
- Unknown - Accessibility Lifts EA

Elevators & Lifts D1010 Inventory Hints

- If the building has an elevator, be sure to enter the elevator control room for a thorough assessment. If not able to access, provide an Inspection Comment.
- Record number of stops, usually the same as number of floors. Find nameplate for make, model, serial number and capacity and enter into Section Details.
- If the elevator control room is not accessible, the make and capacity is typically included on the control panel in the cab.
- The annual elevator inspection certificate may be posted in the elevator, on file with the building Point of Contact (Facility Manager) or base Civil Engineering. The certificate may provide specific information.
- Hydraulic elevators have a large hydraulic oil tank in the elevator control room near the elevator on the lowest floor and will typically be 3 stops or less.
- Electric traction elevators will be more than 4 stops.
- If the elevator capacity information is not available, the assessor should use professional judgment to estimate capacity. Small passenger elevators are typically < 2,500 LBS capacity. Freight elevators are typically > 4,000 LBS capacity.
- Accessibility lifts may be retrofitted on older administrative, recreation or base service buildings.
- Comments should be recorded to clarify component description if Section Name is insufficient.

C. Inventory D1020 Escalators & Moving Walks

Escalators or Moving Walks are extremely rare at USAF bases. These would only be found in buildings such as hospitals, exchanges or possibly large administrative buildings, most likely of newer construction.

D. Inventory D1090 Other Conveying Systems

Typical inventory at USAF bases includes:

- | | |
|------------------------------------|----|
| • Automatic or Manual – Dumbwaiter | EA |
| • Linen/Refuse – Chute | LF |
| • Double Beam Crane | EA |
| • Jib Boom | EA |
| • Trolley Hoists | EA |

Other Conveying Systems D1090 Inventory Hints

- Do not inventory portable jib-booms, A-frames, or lifts added separately after the building was constructed.
- Chutes are quantified by LF. Length can be estimated from floor-to-floor height or by reviewing as-built drawings.
- Chutes and dumbwaiters are uncommon, but may be found in multi-story barracks or large administrative buildings.
- For lifts/hoists, find nameplate for make, model, serial number, capacity and enter into section details.
- The annual Weight Handling Equipment (WHE)/Crane inspection certificate may be located near the lift controls, on file with the building Facility Manager or Civil Engineering. The certificate may provide specific information.
- Inventory Comments should be recorded to clarify component description if Section Name is insufficient.

III. Assessment

A. General D10 Assessment Guidance

Conveying Component Sections are assessed using Direct Condition Rating (DCR). Usually conveying components will be visible. When component sections are not visible, 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 in the software to establish the Condition Index (CI).

When conveying component sections are visible, they should be assessed. The on-site assessment is determined using the Direct Condition Rating (DCR) Definitions chart below for major components D1010, D1020 and D1090. The “Rating” reflects observed deterioration, impact on operability and repair requirements based on the assessor’s professional judgment.

Under no circumstances should age be factored into a direct or distress assessment. Ratings are based on condition, operability and/or survivability only. BUILDER™ SMS already factors in the age from the Install Date when BUILDER™ SMS calculates condition.

Elevators and building WHE require an independent inspection/annual certification separate from assessments performed under the USAF BUILDER™ SMS program. These certifications are normally performed by assigned base staff or through a service contractor. Prior to performing the BUILDER™ SMS assessment, the assessor should contact the base manager(s) responsible for the annual inspection/certification programs to confirm the certification status and discuss the overall condition of the elevator(s) or WHE included in the BUILDER™ SMS assessment. The assessor should rely heavily on this information to assist in determining the “Rating” in conjunction with the DCR Definitions chart. If available, the assessor may want to obtain elevator inspection reports to assist in determining the rating. Following the BUILDER™ SMS assessment, the assessor should inform the appropriate base elevator program manager of any new issues discovered.

NOTE: Red highlighted text is provided as an example of a lifecycle 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

The following conditions or events can accelerate deterioration:

- Improper construction or installation
- Improper maintenance or service
- Improper loading
- Equipment damage

Some thought may be required regarding deterioration and operability loss, along with level of repair. Total operability loss may occur due to some minor reason (e.g. failed switch, hydraulic leak, etc.). In these cases the overall Component Section condition may be “Green” when only a minor fix will correct the problem.

B. Assessment D1010 Elevators & Lifts

Elevators & Lifts D1010 Assessment Hints

- Elevators must have an annual inspection certificate. This certificate should be verified on site or with appropriate staff. If the certificate is out of date, provide an Inspection Comment and notify the building Facility Manager and Civil Engineering maintenance staff immediately.
- Consider information from the building Facility Manager or maintenance staff about the reliability and serviceability of the elevator(s) being assessed. Confirm the elevator or lift is on the base preventive maintenance list and maintenance is being performed.
- Ride the elevator or lift to determine if it stops evenly at the appropriate level.
- Accessibility lifts installed outdoors are subject to increased corrosion and moisture damage to the operating system.
- If conveying systems are not visible, an Inspection Comment must be provided.
- If assessment "Rating" is Amber+ or below, enter an Inspection Comment to describe the reason. Photographs documenting the defects must be taken and 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.

C. Assessment D1020 Escalators & Moving Walks

Escalators & Moving Walks D1020 Assessment Hints

- Similar to D1010

D. Assessment D1090 Other Conveying Systems

Other Conveying Systems D1090 Assessment Hints

- Similar to D1010
- Do not operate the WHE/Crane to perform the assessment. Coordinate with the building Facility Manager or authorized operator if there is a question.

IV. Inventory and Assessment Rules of Thumb

A. Assessor Qualifications

- The assessor should have 5+ years of building construction or maintenance experience related to conveying systems. The assessor should be able to identify common conveying system types/elements and have experience in identifying common problems related to conveying systems.

B. Year Installed

- Additions, new wings, or major renovations likely require identifying separate sections with a different age.
- Older buildings may have retro-fitted elevators. Do not automatically assume the elevator dates to the year the building was built.

C. Inventory/Assessment

- If as-builts can be located, they should indicate conveying system type, material, and quantity.
- Conveying systems in large buildings with separate wings or additions should be sectioned separately by elevator number, e.g. ELEV-1, ELEV-2, etc.

V. Inventory / Assessment Data Collection Sheet

The following data collection form is included as a recommendation and may also 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. Use a separate sheet for each significant building section (floor or wing, e.g. IFL, 2FL, WING A, etc.).

D10 Conveying Systems:									
ELEVATORS	Electric or Hydraulic:			MFG:				Number of Stops:	
CRANES:									
	Type: Bridge, Jib, Monorail or Boom:								
(SEE SEC D1090)	Mfr, Capacity, Ser & Model #								
ADDITIONAL COMMENTS							Inventory		