



USAF Built Infrastructure Inventory and Assessments Manual

Appendix for Staircases (C20)

JULY 2017

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I. Overview

This manual covers the inventory and assessment process for the building “Staircases (C20)” system and components. Please see the SMS Playbook Manual 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. C20 Staircases Description

1. UNIFORMAT II definition

- Staircases allow access and egress to/from multi-level facilities including from the ground level down to a basement or up to the 1st floor level. Full operability of stairs is important to minimize potential of mishaps and injuries. This is especially important for stairs providing emergency egress from the building.

2. Major component

- Staircase (C2010) – allows access and egress to/from multi-level facilities including from the ground level down to a basement or up to the 1st floor level. Materials primarily include concrete, masonry, metal and wood. Component types include Full-Set, Half-Set and Steps. The C20 system includes both interior and exterior staircases.

3. Lifecycle characteristics

- Staircases are classified as long-lived building components falling into two service life categories, 67-Year and 130-Year. Exterior masonry, metal and wood stairs and interior wood stairs fall into the 67-Year category. Exterior and interior concrete and interior metal stairs fall into the 130-Year category. Exterior masonry, wood and metal and interior wood stair components show slow rates of deterioration initially but can accelerate with age if minor distresses are not corrected.

II. Inventory

A. General C20 Inventory Guidance

This section presents common UNIFORMAT II C20 Staircase 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 Material 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 the AFCEC BUILDER™ SharePoint Site Documents Library.

NOTE: Currently, there are no minimum components inventoried and assessed for BUILDER™ SMS inventory for C20 for the USAF. Bases may elect to inventory and assess stairs 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 Condition Indices (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 staircase inventory has previously been entered into BUILDER™ SMS, an inventory is required. Staircase components inventoried for USAF buildings are usually accessible and visible. When staircase components are not visible, as-built drawings should be used to identify and quantify the staircase components. If as-built drawings are not available, the assessor may use experience to make an assumption for the staircase types and quantities based on similar construction, consultation with local staff and other resources such as www.inspectapedia.com.

The remainder of this section provides photo examples of the most common USAF interior construction inventory items categorized by major components and accompanied with the appropriate Material Category, Component Subtype and Quantity from the BRED™ drop down menus. This information is supplemented with general and photo specific inventory hints as a guide for data entry by the assessor.

Staircases C10 Inventory Hints

- Inventory Comments should be recorded to clarify inventory component description if Section Name is insufficient.
- Full sets extend from one floor to another and may have an intermediate landing.
- Half sets may be on exterior of building at the entrance or dock areas or may go to a mezzanine or other intermediate location between floors.
- Staircase should be captured by the staircase frame materials, not by the step or tread materials

B. Inventory C2010 Staircase Component Sections

Staircase Component Sections for the USAF are inventoried by Component Subtype as interior or exterior stairs, construction material and risers in flight.

1. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Exterior Stairs – Concrete (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes/No

Inventory Notes:

- “Full set” is from 1st floor to another floor level and may have an intermediate landing
- Other materials may include metal, wood, or masonry



2. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Exterior Stairs – Concrete (12 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: No

Inventory Notes:

- “Half set” and Steps are captured the same, as noted at end of component types as 12 risers or steps



3. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Interior Stairs – Concrete (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes/No

Inventory Notes:

- Concrete Stair/Steps may be painted or have non-slip strips
- Concrete Stair/Steps may be finished with Carpet, Epoxy or Rubber



4. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Exterior Steps

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: No

Inventory Notes:

- Masonry includes brick, concrete block or concrete masonry units
- Section Name: Ext Stairs-Brick_12 Risers



5. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Interior Steps

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: No

Inventory Notes:

- Section Name: Int Stairs-Masonry_24 Risers



6. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: ExteriorStairs_ Metal (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes/No

Inventory Notes:

- Includes all metal, open grate, and steel stairs with concrete filled steps



7. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: ExteriorStairs

Quantity: FLT Year Built/Renewed: EST

Painted/Coated: Yes/No

Inventory Notes:

- Section Name: Ext Stairs-Metal_6 Risers



8. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Interior Stairs– Metal (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes/No

Inventory Notes:

- Metal Stair/Steps may have different step inserts such as Concrete or Metal grates
- Metal Stair/Steps may have finishes such as Carpet, Rubber



9. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Interior Stairs– Wood (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes

Inventory Notes:

- Wood Stairs/Steps may be painted with non-slip strips applied



10. Material Category: C201001 Interior and Exterior Stairs

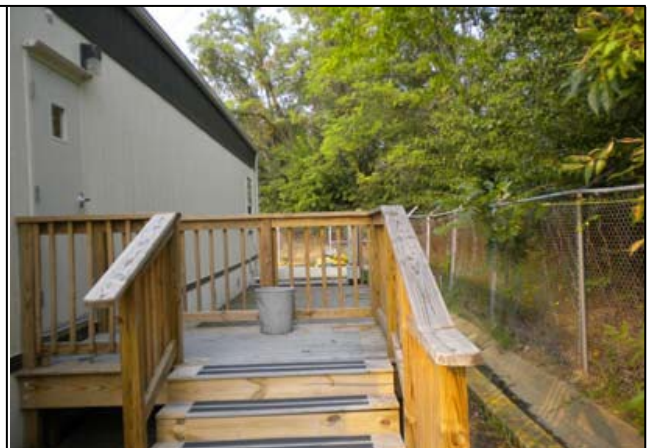
Component Subtype: Exterior Steps

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes

Inventory Notes:

- Finish is normally clear varnish or paint
- Stairs/Steps may have non slip strips applied
- Section Name: Ext Stairs-Wood Risers



11. Material Category: C201001 Interior and Exterior Stairs

Component Subtype: Exterior Steps (24 Riser Flight)

Quantity: FLT Year Built/Renewed: RPAD

Painted/Coated: Yes

Inventory Notes:

- Finish is normally clear varnish or paint
- Treads may be Concrete, Wood or metal



III. Assessment

A. General C2010 Assessment Guidance

Staircase Component Sections are assessed using Direct Condition Rating (DCR). Usually staircase components will be visible and accessible. 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 CI.

When staircase component sections are visible and accessible, they should be assessed.

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 from the Install Date when BUILDER™ SMS calculates condition.

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

- Neglected maintenance including improper drainage
- Improper construction or installation
- Damage or Corrosion
- Foundation settlement
- Cracking

The assessor may observe conditions in the visible staircase construction. If observed the assessor must consider the severity and density of these conditions and use judgment to determine a DCR using the DCR chart below. The assessor must provide an Inspection Comment for any **Amber+** or lower DCR or BUILDER™ SMS calculated Distress Survey Rating. Photographs documenting the defects must be taken and attached to the assessment.

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

BUILDER™ SMS provides the ability for the assessor to rate component painted or coated surfaces. Some components include manufacturer (or factory) finishes. These finishes tend to age consistent with the components. Other components have local or field applied paints or coatings. The DCR Definitions - Coatings chart below should be used by the assessor to rate non- manufacturer applied coatings. This chart should be used to rate coatings for:

- Steel, wood and concrete stairs
- Metal rails

The assessor should match actual coating observations listed in the chart and apply the corresponding rating. Do not forget to check the “paint box” in BRED™.

Direct Condition Rating (DCR) Definitions - Coatings	
Rating	Observation
Green (+)	Perfect condition. No visible deterioration.
Green	Little visible deterioration.
Green (-)	Some visible deterioration.
Amber (+)	Minor visible deterioration.
Amber	Moderate visible deterioration.
Amber (-)	Major visible deterioration.
Red (+)	Significant visible deterioration.
Red	Severe visible deterioration.
Red (-)	Complete deterioration.

B. Assessment C2010 Staircases

Below are assessment hint questions to help the assessor determine the most appropriate DCR and examples of common distresses.

<u>C2010 Assessment Hint Questions</u>	
<ul style="list-style-type: none"> • What distresses or problems are observed? • What is the quantity and severity of the distresses? • Is the staircase damaged? • Will repairs preserve or extend the remaining service life of the stairs? • Can they be used safely, even in an emergency? 	
Based on above:	
<ul style="list-style-type: none"> • Select a DCR from the chart. • If assessment rating is Amber + or below, enter an Inspection Comment to describe the reason or for any significant issue. Photographs documenting the defects must be taken and attached to the assessment. 	

Examples of typical staircase distresses and conditions include:



IV. Inventory and Assessment Rules of Thumb

A. Assessor Qualifications

- The assessor should have 5+ years of building construction or maintenance experience in the structural or architectural area or be equivalent to a Journeyman, a V Level Technician, an Architect or a Civil Engineer. The assessor should be able to identify common building staircase construction and material types/elements and have experience in identifying common distresses caused by building problems.

B. Year Installed

- Staircases that are integral to building are typically the same age as building.
- Some staircases 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 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 staircase section with a different age.
- If the component section appears to have been installed when the building was constructed, check available as-built drawings to determine the original construction date.

C. Inventory/Assessment

- Typical Section Names used for C20 include: (1FL, 2FL, N. WING, S. Wing, etc.).
- Pay special attention to emergency egress stairs and rails for damage. Loose stair treads on egress stairs should result in a lower "Rating."
- Portable or wheeled steps commonly used in warehouses are not assessed.
- Staircase finishes (carpet, tile, VCT) are captured under C3020 Floor Finishes.
- The assessor should consider handrail condition in the overall staircase assessment. Handrails are part of the C2010 component and they are not inventoried separately. A detailed assessment comment should be added pertaining to poor stair handrail conditions.

V. Inventory/Assessment Data Collection Sheets

The following data collection form is included as a recommendation and may also be found in the Tool Box. Many assessors also use floor plans or a notebook. Use whatever collection method works best for the individual assessor.

(See Next 2 Pages)

Architectural Inventory Sheet

Building											Date:	
Assessor:	1FL	2FL	3FL	4FL	contact					Length x width	Date Built or Renewed	
Superstructure												
Exterior Ramp/Loading dock												
Foundation					SOG	STRIP	SPREAD	Pier (LF)				
Roof Construction					Metal	Wood	Other					
Stairs Metal					1/2 sets		Full sets					
Stairs Wood					1/2 sets		Full sets					
Stairs Concrete					1/2 sets		Full sets					
Exterior Walls												
Exterior Walls 2												
Exterior Ladder (LF)												
Exterior Windows												
Exterior Windows 2												
Exterior doors					Metal		Glass		Wood			
Exterior Other doors												
Interior Construction												
Partitions												
Partitions 2												
Partitions 3												
Interior Doors wood					Metal		Glass		Wood			
Interior Doors Other												
Interior Ladder (LF)												
Interior Stairs Metal					1/2 sets		Full sets					
Interior Stairs Wood					1/2 sets		Full sets					
Interior Stairs Concrete					1/2 sets		Full sets					
Interior Finishes												
Wall Finishes												
Drywall												
Ceramic tile												
Acoustical												
Plaster												
Other												
Floor Finishes												
Carpet												
Ceramic tile												
Epoxy												
Linoleum												
Wood												
Rubber												
VCT												
Other												
Ceiling Finishes												
Acoustical Suspended												
Acoustical Attached												
Drywall												

Architectural Inventory Sheet

Building											Date:			
	1FL	2FL	3FL	4FL	contact						Direct Rating			
Superstructure														
Exterior Ramp/Loading dock														
Foundation					SOG	STRIP	SPREAD	Pier (LF)				Age Base	Age Base	
Roof Construction					Metal	Wood	Other					Age Base	Age Base	
Stairs Metal					1/2 sets		Full sets							
Stairs Wood					1/2 sets		Full sets							
Stairs Concrete					1/2 sets		Full sets							
Exterior Walls														
Exterior Walls 2														
Exterior Ladder (LF)														
Exterior Windows														
Exterior Windows 2														
Exterior doors					Metal		Glass		Wood					
Exterior Other doors														
Interior Construction														
Partitions														
Partitions 2														
Partitions 3														
Interior Doors wood					Metal		Glass		Wood					
Interior Doors Other														
Interior Ladder (LF)														
Interior Stairs Metal					1/2 sets		Full sets							
Interior Stairs Wood					1/2 sets		Full sets							
Interior Stairs Concrete					1/2 sets		Full sets							
Interior Finishes														
Ceiling Finishes														
Acoustical Suspended														
Acoustical Attached														
Drywall														
Plaster														
Popcorn														
Concrete														
Other														
Floor Finishes														
Carpet														
Ceramic tile														
Epoxy														
Linoleum														
Wood														
Rubber														
VCT														
Other														
Wall finishes														
Drywall														
Ceramic tile														
Acoustical														
Plaster														
Other														