

# Proposed July 2016

GUIDEBOOK:

## Facility Condition Assessment

Federal Transit Administration

U.S. Department of Transportation



U.S. Department  
of Transportation

**Federal Transit  
Administration**

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## 1.0 Introduction

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### 1.1 Background and Purpose

The objective of this guidebook is to detail the methodology for transit agencies to use for measuring and reporting facility conditions of administrative, maintenance, and passenger facilities to the National Transit Database (NTD). This information on facility conditions is intended to supplement other facility-related information entered in the NTD Asset Inventory Module and fulfills the reporting requirements for the Transit Asset Management Performance targets.

### 1.2 Document Organization

This guidebook is organized into four main sections:

- **Section 1** describes the scope of this document and provides a brief policy background, linking this guidance to the requirements of the NTD.
- **Section 2** outlines data requirements and definitions relating to reporting facility condition data.
- **Section 3** details facility components and sub-components, and provides instructions on how to assess their condition.
- **Section 4** presents a set of appendices, including a glossary of terms, example forms, and references.

### 1.3 Legislative Background

The guidance presented here is intended to help agencies fulfill data requirements outlined by Title 49, §5335 of the U.S. Code (U.S.C.): National Transit Database. As described in 49 U.S.C. §5335, the NTD serves to gather uniformly categorized financial, operating, and asset condition information from transit agencies to assist with public transportation service planning and investment. The resulting information and organization of the NTD is intended to help any level of government make investment decisions. Any organization receiving funds under §5307 or §5311 must report data consistent with the uniform requirements for inclusion in this database.

The FTA uses NTD data to apportion funding to transit agencies across the country, with separate funding programs for transit agencies that operate in urbanized and rural areas. Agencies that operate in both urban and rural areas may receive or benefit from both funding programs. In order to receive funding from the FTA, transit agencies must report to the NTD in a compliant manner.

The transportation reauthorization legislation Moving Ahead for Progress in the 21st Century (MAP-21) contains several provisions impacting 49 U.S.C. §5335. Section 20025 of MAP-21 specifically adds “asset condition information” to the scope of the NTD. Section 20019 clarifies the need for this information. It includes a definition of a “transit asset management plan” to be required of grant recipients, and a requirement that Secretary of Transportation develop a

## FTA Facility Condition Assessment Guidebook

definition of “state of good repair” (SGR) that includes “standards for measuring the condition of capital assets of recipients, including equipment, rolling stock, infrastructure, and facilities.”

Given that the NTD did not previously include data on facility conditions, MAP-21 effectively created a new requirement that this data be added to the NTD to support requirements for transit asset management plans and calculation of SGR-related measures. This guidebook offers a methodology for defining, gathering, and reporting this new facility condition data.

## 2.0 Reporting and Data Requirements

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### 2.1 Reporting Procedures

The NTD Policy Manual lists requirements regarding collecting and reporting financial data, service data, and safety data, collected annually from all transit agencies receiving or benefiting from §5307 or §5311 formula grants. The NTD defines several reporting types depending on the size of the agency in question and whether they fall into the category of Urban or Rural. Medium, large, and some small agencies are Full Reporters, which require monthly reports, while smaller agencies are often in the category of Reduced Reporting and submit on an annual basis.

Agencies required to submit an Annual Report must do so four months after the end of that agency's fiscal year end date. Following this deadline, there is a four-month revision period during which the report is reviewed and can be revised by agency reporters and NTD analysts to ensure that it is compliant. For full reporting agencies, the required monthly reports are due on the last day of the month following collection. For more detail, refer to the NTD Policy Manual Introduction, which further defines agency categories and associated reporting requirements.

Facility condition data must be reported as part of a reporter's Annual Report. However, this does not imply that condition data must be collected annually. It is understood that it would be time consuming for agencies to reassess facility conditions annually. Thus, FTA requires that facility condition data **be fully updated every three years at a minimum**. Each report must include updated facility condition data incorporating any assessments completed since the last report.

For an agency with a single facility the above requirements may translate into performing a condition assessment on the facility every three years. In contrast, a larger agency would likely perform condition assessments on an annual cycle, each year updating approximately a third of its data. Alternatively an agency might choose to assess conditions of selected facilities on a more frequent cycle.

When reporting facility conditions, a reporter is required to specify the overall condition for each facility detailed in the agency's asset inventory using the scale described in the next section. This overall condition is derived from assessment of the condition of individual components of the facility. Agencies are not required to report more detailed component-level data, but are encouraged to retain this information for their own use and recordkeeping.

In addition to reporting facility conditions, it is recommended that larger agencies document their procedures for performing condition assessments, including procedures for performing inspections, and assuring/controlling data quality. Similar to other aspects of an agency's activities related to NTD reporting, these procedures may be subject to review by FTA. Note agencies are not required to prepare such documentation, but are encouraged to do so as good management practice.

## 2.2 Data Requirements

This section defines what data on facilities are required to be collected. The NTD Policy Manual offers definitions on what building types must be assessed, while the FTA's Asset Inventory Model (AIM) details what data specifically must be reported on each facility type.

### 2.2.1 Facility Types

The condition assessment data must be gathered on all facilities as defined by the FTA. The definitions for different types of facilities are listed below. These definitions are stated in the NTD Policy Manual and are included in this document for completeness.

*These definitions are taken from the 2014 NTD Policy Manual and are included here for completeness.*

#### **Maintenance and Administrative Facilities**

##### ***Administrative Facilities***

Administrative facilities are typically offices which house management and supporting activities for overall transit operations such as accounting, finance, engineering, legal, safety, security, customer services, scheduling and planning. They also include facilities for customer information or ticket sales, but that are not part of any passenger station.

##### ***Maintenance Facilities***

NTD defines two types of maintenance facilities: General Purpose and Heavy Maintenance. Some transit agencies use the same facility for both general purpose and heavy maintenance. In these cases, agencies must report facilities they use for both purposes as general-purpose maintenance facilities. Agencies must not report maintenance facilities where third-party vendors perform services, such as a local gasoline service or body shop. The two maintenance facility types are defined more specifically below.

**General Purpose Maintenance Facilities:** A garage or building where mechanics perform routine maintenance and repairs. Agencies must report general-purpose maintenance facilities by ownership (owned vs. leased) and size (the number of revenue vehicles that can be serviced).

**Heavy Maintenance Facilities:** A garage or building where agencies may perform engine and other major unit rebuilds. These are more typical for larger agencies. The NTD identifies facilities devoted exclusively to major rebuilds as heavy maintenance facilities. Transit agencies must report heavy maintenance facilities by ownership category. Agencies do not report data by facility size for heavy maintenance facilities.

##### ***Ownership Types***

Transit agencies must identify maintenance facility ownership based on the type of service provided (directly operated or purchased transportation). For directly operated service, transit agencies must report if the facility is publicly owned or privately owned. Transit agencies identify if they own the facility, lease it from another public agency (such as a city highway department), or lease it from a private entity. For purchased transportation service, agencies must indicate if there is public or private involvement in the maintenance facility.

**Size Types:** The NTD divides size into three categories based on the number of revenue vehicles that can be serviced.

- Under 200 vehicles
- 200–300 vehicles
- More than 300 vehicles

**Shared Facilities:** Some transit agencies share facilities between multiple modes or types of service. The most common arrangement is the operation of bus and demand response vehicles in a single facility. For reporting purposes, these shared facilities must be allocated among the various modes or types of service using the facility.

### Passenger and Parking Facilities

Agencies report passenger station information for fixed route, fixed schedule services (rail modes, bus modes, trolleybus, ferryboat, and aerial tramway). Each agency must report data for all passenger stations that the agency uses, even if the agency does not own the stations.

Passenger stations are significant structures with a separate right-of-way (ROW). For rail modes, passenger facilities typically mean a platform area and any associated access structures or accessory spaces accessible to passengers or by staff who are in support of passenger service. This definition of passenger facilities includes:

- All rail passenger facilities (except for light rail, cable car, and streetcar modes)
- All light rail, cable car, and streetcar passenger facilities that have platforms and serve track that is in a separate ROW (not in mixed-street traffic)
- All motorbus, rapid bus, commuter bus, and trolley bus passenger facilities in a separate ROW that have an enclosed structure (building) for passengers for items such as ticketing, information, restrooms, and concessions
- All transportation, transit or transfer centers, park-and-ride facilities, and transit malls if they have an enclosed structure (building) for passengers for items such as ticketing, information, restrooms, concessions, and telephones

As an example, a bus stop on a street or in a median is not a station if the bus stop does not have a separate, enclosed building. Open shelters, canopies, lighting, signage, or ramps for accessibility alone are not enough to establish a passenger station.

### 2.2.2 Inventory Data

The NTD Asset Inventory Module (AIM) stores basic information on assets and infrastructure applied by U.S. transit agencies to deliver service. The pilot version of the AIM is currently available as a Microsoft Excel spreadsheet. This reporting format may eventually be incorporated as part of the online NTD reporting system.

The Asset Inventory Module contains the following forms:

- Agency Identification (A-00)
- Administrative and Maintenance Facility Inventory (A-10)
- Passenger and Parking Facility Inventory (A-20)
- Rail Fixed Guideway Inventory (A-50)
- Track Inventory (A-55)
- Service Vehicle Inventory (A-60)
- Revenue Vehicle Inventory (A-70)
- Direct Entry Inventory (A-80)

Facility conditions are reported on forms A-10 and A-20, which are detailed below.

### **Administrative and Maintenance Facility Inventory Data<sup>1</sup>**

Data on administrative and maintenance facilities are reported using form A-10, Administrative and Maintenance Facility Inventory. This form gathers required information such as facility name, address, square footage, year built or substantially reconstructed, and the primary mode served by or operated out of the facility. An agency must report all facilities for which it has a capital interest. Further, for each reportable facility an agency must indicate its percent of responsibility for capital replacement costs, including costs that would be part of the planning, design, and replacement of a facility. The form also specifies facility sub-type based on size and function.

Note that for each reportable facility an agency is required to report the overall condition of the facility using a single numeric value. Each facility consists of multiple components and may consist of multiple buildings. Refer to the guidance in the following sections for approaches to aggregating condition data for reporting.

An abridged version of the A-10 form's data collection fields is included in Table 1 on the following page.

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<sup>1</sup> See full instructions from the latest Asset Inventory Reporting Manual (2014), page 20.



**Table 1 – Administrative and Maintenance Facilities Asset Inventory Data Fields**

Form	Field	Description	Validated?
<b>Agency Information</b>	NTD Identification No.	Four-digit number assigned to agency by FTA	Yes
	Agency Name / Acronym	Trademark or familiar name	Yes
	Mailing Address	Agency mailing address	Yes
	Urbanized Area	UZA number(s) as identified by US Census	Yes
<b>Administrative and Maintenance Facilities (A-10)</b>	Facility Name	Name of administrative or maintenance facility	Yes
	Section of Larger Facility	Mark if age of different facility pieces varies significantly	No
	Street Address	Several location fields regarding address or nearest approximation	No
	Primary Mode	Select primary mode served at facility	No
	Facility Type	One of six maintenance facility types or one of two administrative facility types	Yes
	Year Built or Replaced	Year in which facility or section of facility was built or substantially reconstructed as new.	Yes
	Square Feet	Best available measurement for total number of square feet in facility	Yes
	Percent Capital Responsibility	Reflects ownership and funding responsibility	Yes
	Estimated Condition Assessment	Currently an auto-populated field providing estimated rating based on facility age	No
	Condition Assessment	Overall assessment of the condition of the facility performed based on the guidance in this document	No
	Estimated Date of Condition Assessment	Month and year that the facility condition assessment was conducted	No

Source: NTD Asset Inventory Module FY 2015 Reporting Manual

### Passenger and Parking Facility Inventory Data<sup>2</sup>

Form A-20, Passenger and Parking Facilities Inventory, collects data gathered for the facility condition measure for facilities of this type, based on the definitions above. All passenger facilities falling under these definitions are reported, even if they are not owned by the agency or partially owned by the agency. The percent of responsibility is indicated under “percent capital

<sup>2</sup> See full instructions from the latest Asset Inventory Reporting Manual (2014), page 26.

responsibility.” Many of the requirements are the same as those for the Administrative and Maintenance Facilities form, with the exception that number of parking spaces can also be used here as an indication of facility size.

As in the case of administrative/maintenance facilities, for each reportable facility an agency is required to report the overall condition of the facility using a single numeric value. Each facility consists of multiple components and may consist of multiple buildings. Refer to the guidance in the following sections for approaches to aggregating condition data for reporting.

An abridged version of the Form A-20’s data collection fields is included in Table 2 below.

**Table 2 – Passenger and Parking Facilities Asset Inventory Data Fields**

Form	Field	Description	Validated?
Agency Information	NTD Identification No.	Four-digit number assigned to agency by FTA	Yes
	Agency Name / Acronym	Trademark or familiar name	Yes
	Mailing Address	Agency mailing address	Yes
	Urbanized Area	UZA number(s) as identified by US Census	Yes
Passenger and Parking Facilities (A-20)	Facility Name	Name of administrative or maintenance facility	Yes
	Section of Larger Facility	Mark if age of different facility pieces varies significantly	No
	Street Address	Several location fields regarding address or nearest approximation	No
	Primary Mode	Select primary mode served at facility	No
	Facility Type	One of six maintenance facility types or one of two administrative facility types	Yes
	Year Built or Replaced	Year in which facility or section of facility was built or substantially reconstructed as new.	Yes
	Square Feet or Number of Spaces	Best available measurement for total number of square feet or parking spaces in facility	Yes
	Percent Capital Responsibility	Reflects ownership and funding responsibility	Yes
	Estimated Condition Assessment	Currently an auto-populated field providing estimated rating based on facility age	No
	Condition Assessment	Overall assessment of the condition of the facility performed based on the guidance in this document	No
	Estimated Date of Condition Assessment	Month and year that the facility condition assessment was conducted	No

Source: NTD Asset Inventory Module FY 2015 Reporting Manual

### 2.2.2 Condition Assessment Measure

The condition measure used in the NTD is the five-point scale used by FTA's Transit Economic Requirements Model (TERM). This scale has the following values:

- 5 – Excellent
- 4 – Good
- 3 – Adequate
- 2 – Marginal
- 1 – Poor

An asset is deemed to be in good repair if it has a rating of 3, 4 or 5 on this scale. Likewise, a facility is deemed to be not in good repair if it has a rating of 1 or 2.

To determine the overall condition of an administrative or maintenance facility, an agency must inspect and assess the following facility components at a minimum:

- A. Substructure
- B. Shell
- C. Interiors
- D. Conveyance (Elevators and Escalators)
- E. Plumbing
- F. HVAC
- G. Fire Protection
- H. Electrical
- I. Equipment
- J. Site

Section 3 of this document describes how to assess each of these components, and how to aggregate the component-level assessments into an overall rating.

To determine the overall condition of passenger facility, an agency must inspect and assess the following facility components at a minimum:

- A. Substructure
- B. Shell
- C. Interiors
- D. Conveyance (Elevators and Escalators)
- E. Plumbing
- F. HVAC
- G. Fire Protection
- H. Electrical
- I. Fare Collection
- J. Site

Section 3 of this document describes how to assess each of these components, and how to aggregate the component-level assessments into an overall rating.

## 2.3 Summary

The following is a summary of the facility condition assessment requirements described above.

### ***Facility Condition Assessment Requirements***

- Transit agencies reporting to the NTD are required to report the overall condition of each administrative, maintenance and passenger facility listed in the NTD Asset Inventory Module.
- Transit agencies must update facility conditions every three years at a minimum.
- The overall condition of a facility is specified using the following scale:
  - 5 – Excellent
  - 4 – Good
  - 3 – Adequate
  - 2 – Marginal
  - 1 – Fair

Note that a facility is deemed to be in good repair if it has a condition rating of 3, 4 or 5 on this scale and is deemed to not be in good repair if it has a rating of 1 or 2.
- To establish the overall condition of a facility an agency must first assess the condition of major facility components, and then aggregate the component level data to obtain an overall condition rating.
- Major facility components include:
  - Substructure
  - Shell
  - Interiors
  - Conveyance (Elevators and Escalators)
  - Plumbing
  - HVAC
  - Fire Protection
  - Electrical
  - Equipment (Administrative and Maintenance Facilities only)
  - Fare Collection (Passenger Facilities only)
  - Site
- Component-level conditions are aggregated to obtain an overall condition for the facility. Alternative approaches are provided for aggregation depending on data availability.

It is recommended that agencies document their procedures for performing condition assessments, including procedures for performing inspections, and assuring/controlling data quality. Similar to other aspects of an agency's activities related to NTD reporting, these procedures may be subject to a review by FTA.

For characterizing overall facility conditions, FTA uses the condition results for each facility to calculate the percentage of all facilities with a condition of 1 or 2 (not in good repair). The measure was developed with the following considerations:

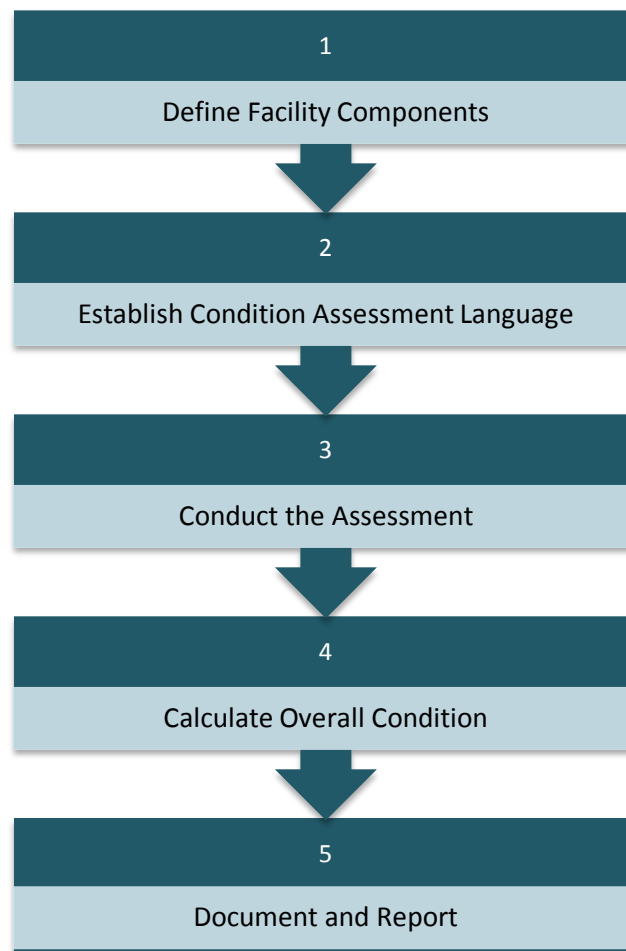
- The proposed measure supports FTA's requirement to assess the conditions and performance of the nation's transit system.
- The measure can be supported by more detailed data on the individual systems of a facility to support development of transit asset plans.
- Requiring only high-level condition data for each facility avoids unnecessary burden, with requirements general enough to encompass agencies' different internal processes and established assessment techniques. This minimizes challenges in data collection and interpretation.
- The measure's reporting structure and schedule encompasses existing FTA data-gathering processes and reporting timelines.

## 3.0 Condition Assessment Procedures

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### 3.1 Overview

The figure below illustrates the basic steps in assessing facility condition. Before performing any assessments it is first necessary to determine exactly what items must be assessed. The approach recommended here is to divide a facility into major components and inspect each component. Section 3.2 describes the recommended components for inclusion in a condition assessment, and common sub-components. Next, it is necessary to define how to assess each component. Section 3.3 describes how to apply the five-point condition scale to each of the components, providing condition state language for each. Once the inspection components and condition state language have been defined, the next step is to perform the condition assessment, described further in Section 3.4. This yields data on condition by component. Section 3.5 describes how to aggregate these data to overall facility condition. Finally, the agency reports the conditions and prepares any required supporting documentation. An important aspect of this final step is documenting the agency's approach to quality management. Section 3.6 discusses key considerations with respect to this topic.



## 3.2 Facility Components and Sub-Components

This section describes the specific components and sub-components that must be inspected as part of a facility condition assessment. The component classification is based upon American Society of Testing and Materials (ASTM) documents that provide standards for classification of building components and related site components, but these have been customized in certain respects to address common features of transit facilities.

**Table 3 recommends facility components and sub-components for administrative / maintenance facilities, while Table 4** provides a list for passenger facilities. The primary difference between these is the inclusion of specialized equipment — maintenance and operations in administrative / maintenance facilities, and fare collection and passenger amenities in passenger facilities.

**Table 3 - Administrative/Maintenance Facility: Component and Sub-Component List and Definition**

ID#	Components	Sub-Components
A.	<b>Substructure</b>	<ul style="list-style-type: none"> <li>Foundations: Walls, columns, pilings other structural components</li> <li>Basement: Materials, insulation, slab, floor underpinnings</li> </ul>
B.	<b>Shell</b>	<ul style="list-style-type: none"> <li>Superstructure / structural frame: columns, pillars, walls</li> <li>Roof: Roof surface, gutters, eaves, skylights, chimney surrounds</li> <li>Exterior: Windows, doors, and all finishes (paint, masonry)</li> <li>Shell appurtenances: Balconies, fire escapes, gutters, downspouts</li> </ul>
C.	<b>Interiors</b>	<ul style="list-style-type: none"> <li>Partitions: walls, interior doors, fittings such as signage</li> <li>Stairs: Interior stairs and landings</li> <li>Finishes: Materials used on walls, floors, and ceilings</li> </ul> <p>This component covers all interior spaces, regardless of use.</p>
D.	<b>Conveyance</b>	<ul style="list-style-type: none"> <li>Elevators</li> <li>Escalators</li> <li>Lifts: any other such fixed apparatuses for the movement of goods or people</li> </ul>
E.	<b>Plumbing</b>	<ul style="list-style-type: none"> <li>Fixtures</li> <li>Water distribution</li> <li>Sanitary waste</li> <li>Rain water drainage</li> </ul>
F.	<b>HVAC</b> (Heating, ventilation, and air conditioning)	<ul style="list-style-type: none"> <li>Energy supply</li> <li>Heat generation and distribution systems</li> <li>Cooling generation and distribution systems</li> <li>Testing, balancing, controls and instrumentation</li> <li>Chimneys and vents</li> </ul>
G.	<b>Fire Protection</b>	<ul style="list-style-type: none"> <li>Sprinklers</li> <li>Standpipes</li> </ul>

		<ul style="list-style-type: none"> <li>Hydrants and other fire protection specialties</li> </ul>
<b>H.</b>	<b>Electrical</b>	<ul style="list-style-type: none"> <li>Electrical service &amp; distribution</li> <li>Lighting &amp; branch wiring (interior and exterior)</li> <li>Communications &amp; security</li> <li>Other electrical system-related pieces such as lightning protection, generators, and emergency lighting</li> </ul>
<b>I.</b>	<b>Equipment</b>	<ul style="list-style-type: none"> <li>Equipment related to the function of the facility, including maintenance or vehicle service equipment</li> <li>For clarity, includes only items valued above \$10,000 and related to facility function</li> </ul>
<b>J.</b>	<b>Site</b>	<ul style="list-style-type: none"> <li>Roadways/driveways and associated signage, markings, and equipment</li> <li>Parking lots and associated signage, markings, and equipment</li> <li>Pedestrian areas and associated signage, markings, and equipment</li> <li>Site development such as fences, walls, and miscellaneous structures</li> <li>Landscaping and irrigation</li> <li>Site Utilities</li> </ul>

**Table 4 - Passenger Facility: Component and Sub-Component Definitions**

<b>ID#</b>	<b>Components</b>	<b>Sub-Components</b>
<b>A.</b>	<b>Substructure</b>	<ul style="list-style-type: none"> <li>Foundations: Walls, columns, pilings other structural components</li> <li>Basement: Materials, insulation, slab, floor underpinnings</li> </ul>
<b>B.</b>	<b>Shell</b>	<ul style="list-style-type: none"> <li>Superstructure / structural frame: columns, pillars, walls</li> <li>Roof: Roof surface, gutters, eaves, skylights, chimney surrounds</li> <li>Exterior: Windows, doors, and all finishes (paint, masonry)</li> <li>Shell appurtenances: Balconies, fire escapes, gutters, downspouts</li> </ul>
<b>C.</b>	<b>Interiors</b>	<ul style="list-style-type: none"> <li>Passenger areas: platform and access tunnels / passageways</li> <li>Partitions: walls, interior doors, fittings such as signage</li> <li>Stairs: Interior stairs and landings</li> <li>Finishes: Materials used on walls, floors, and ceilings</li> </ul> <p>This component covers all interior spaces, regardless of use.</p>
<b>D.</b>	<b>Conveyance</b>	<ul style="list-style-type: none"> <li>Elevators</li> <li>Escalators</li> <li>Lifts: any other such fixed apparatuses for the movement of goods or people</li> </ul>
<b>E.</b>	<b>Plumbing</b>	<ul style="list-style-type: none"> <li>Fixtures</li> <li>Water distribution</li> </ul>



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		<ul style="list-style-type: none"> <li>• Sanitary waste</li> <li>• Rain water drainage</li> </ul>
<b>F.</b>	<b>HVAC</b> (Heating, ventilation, and air conditioning)	<ul style="list-style-type: none"> <li>• Energy supply</li> <li>• Heat generation and distribution systems</li> <li>• Cooling generation and distribution systems</li> <li>• Testing, balancing, controls and instrumentation</li> <li>• Chimneys and vents</li> </ul>
<b>G.</b>	<b>Fire Protection</b>	<ul style="list-style-type: none"> <li>• Sprinklers</li> <li>• Standpipes</li> <li>• Hydrants and other fire protection specialties</li> </ul>
<b>H.</b>	<b>Electrical</b>	<ul style="list-style-type: none"> <li>• Electrical service &amp; distribution</li> <li>• Lighting &amp; branch wiring (interior and exterior)</li> <li>• Communications &amp; security</li> <li>• Other electrical system-related pieces such as lightning protection, generators, and emergency lighting</li> </ul>
<b>I.</b>	<b>Fare Collection Equipment</b>	<ul style="list-style-type: none"> <li>• Items including turnstiles, ticket machines, and any other major equipment requiring capital request for replacement</li> </ul>
<b>J.</b>	<b>Site</b>	<ul style="list-style-type: none"> <li>• Roadways/driveways and associated signage, markings, and equipment</li> <li>• Parking lots and associated signage, markings, and equipment</li> <li>• Pedestrian areas and associated signage, markings, and equipment</li> <li>• Site development such as fences, walls, and miscellaneous structures</li> <li>• Landscaping and irrigation</li> <li>• Site Utilities</li> </ul>

### **Example: Classification of Facility Components**

**Question:** How are the following items classified using the proposed facility components?

- Staircases
- Sprinkler systems
- Maintenance lifts and bays
- Track within a station
- Switch gears used to power a subway system

**Answer:**

- Staircases are classified as part of the Interior, but any fire escapes on the outside of a building are classified as part of the Shell.
- Sprinkler systems are classified as part of Fire Protection. Other fixtures not associated with fire protection are part of Plumbing.
- Maintenance lifts are included in Conveyance. Bays and other major pieces of equipment are part of Equipment.
- The track within a station is not inspected as part of the facility, but is instead part of the guideway.
- Switch gears and other assets associated directly with the movement of vehicles are not inspected as part of the facility and are instead classified as part of the guideway.

### 3.3 Condition Assessment Guidelines and Rating Descriptions

This section provides descriptions of conditions corresponding to each condition rating for each component. Use these ratings and descriptions as a guide to assign a score to the individual components as they are rated.

This section is based on ASTM standards that describe a basic approach for facility condition assessment that can be easily adapted and applied to a wide number of different facilities. However, individual agencies may find it necessary to tailor the components and condition descriptions provided here; this may include customizations to address specialized assets or conditions, incorporate existing practices and data, and/or leverage more detailed data the agency collects.

#### **Example: Condition Assessment Rating Scale**

**Question:** An inspection is performed on a relatively new facility. All facility components are functioning well. There are no functional defects or repairs needed, but in some cases components have superficial damage such as scratches or dents. How should these components be rated?

**Answer:** The components still in new condition would be rated 5: Excellent. Components with no more than superficial defects would be rated as 4: Good.

#### 3.3.1 Condition Assessment Rating Scale

Table 5 details the condition rating scale established in FTA's TERM. Subsequent tables detail how this general scale must be applied for each individual component. Note the scale is categorical, and thus only integer values on the scale are defined. To rate components which are partially in one condition and partially in another, it is recommended that an inspector record the percentage of the component quantity in each condition and calculate a "weighted" rating. The following sections detail how to apply the overall rating definitions to the recommended set of facility components.


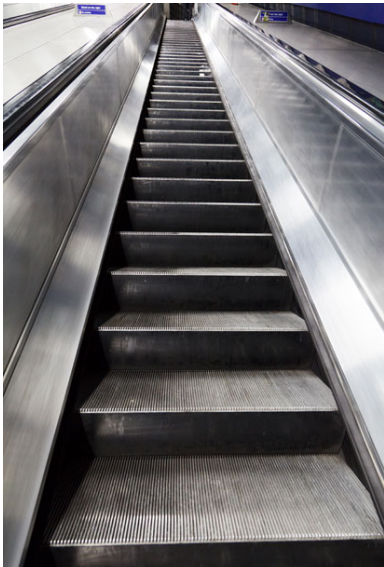
**Table 5 - General Condition Assessment Rating Scale**

Rating	Condition	Description
5	Excellent	No visible defects, new or near new condition, may still be under warranty if applicable
4	Good	Good condition, but no longer new, may have some slightly defective or deteriorated component(s), but is overall functional
3	Adequate	Moderately deteriorated or defective components; but has not exceeded useful life
2	Marginal	Defective or deteriorated component(s) in need of replacement; exceeded useful life
1	Poor	Critically damaged component(s) or in need of immediate repair; well past useful life

These ratings are applied to each system or component, with those condition rating descriptions provided in detail in the appendix. An example of the application of the rating scale to a component is provided in Table 6 below.

**Table 6 - Example Condition Rating Descriptions By Component**

*Note: tables for each component are included in Appendix 4.2.*

Component	Rating	Description
<b>D. Conveyance</b> <ul style="list-style-type: none"> <li>Elevators</li> <li>Escalators</li> <li>Lifts: any other such fixed apparatuses for the movement of goods or people.</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor improvement needed; only shows superficial damage or defect with no functional impact. Issues are addressed via routine maintenance.
	3: Adequate	Repairs are needed; components show signs of corrosion and damage. They are cosmetically “fair”, but functioning as intended under maintenance schedule.
	2: Marginal	Component or sub-components need replacement or extensive repair. More substantial part replacement and/or repair is frequent. There currently does not appear to be any safety issue. Maintenance schedule is interrupted by more frequent breakdowns.
	1: Poor	Component or sub-components have critical defects affecting function. They are in visibly poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review. Maintenance schedule is reactive rather than proactive due to frequent malfunction.

### 3.4 Condition Assessment Procedures

This section describes how to assess the condition of a facility based on inspection of the components recommended in Section 3.2 using the condition assessment language described in Section 3.3.

Note the condition assessment is primarily intended to assess the overall physical condition of the facility to support capital investment decisions. However, inspectors must also note and report any defects that may constitute a safety concern or potential service delay as these types of defects may require immediate attention. Components with a portion or all of their quantity assigned a rating of 1 may have issues warranting a structural or detailed review. Within this guidebook, the terms “structural review” and “detailed review” are defined as review by a person qualified to evaluate the field observed conditions and make a determination of the impacts of the conditions on the performance of the component. Such reviews may include examination of the field inspection results, as well as any notes or photos of the component from the inspection, review of as-built plans, and/or supplemental analysis as deemed appropriate to evaluate the performance of the component. Agencies may establish additional guidance to aid the inspector in determining field circumstances where structural or other detailed review is warranted, taking into consideration the education, training and experience of their inspection staff.

Prior to a facility condition assessment, it is recommended that the inspector gather and review the results of any previous inspections as well as the following:

- **Agency procedures:** Review inspection and maintenance procedures, how they have been followed or updated in the past.
- **Inspection schedule:** Understand how the inspection schedule aligns with the reporting schedule discussed in the first part of this guidebook.
- **Data needs:** Review applicable fields in the Asset Inventory Module and review these during the inspection process where applicable.
- **Warranty status** and any additional information on the age of components and building materials: this may be helpful in understanding useful life and obsolescence.
- **Any other known issues**, such as whether components have been built to current standards. Inspectors are required to have on hand the results of

#### ***Examples: Condition Assessment Procedures***

**Question:** What actions must occur if an inspector rates a component with 1: Poor?

**Answer:** A suitably qualified individual must review the inspection results and other associated information for any component rated 1: Poor using procedures established by the agency.

**Question:** A passenger facility has two elevators and two escalators. The inspector's agency does not have information concerning the replacement cost for these assets, and has decided to calculate percentages based on the number of units. The elevators appear new and rated as 5: Excellent. The escalators show signs of damage, and have required frequent repairs in recent year. The inspector rates these as 2: Marginal. What is the rating for Conveyance for the facility?

**Answer:** In this case, the quantity for Conveyance is 4 units. 2 of the units (50%) are rated as 5: Excellent and 2 of the units (50%) are rated as 2: Marginal. Section 3.5 describes how these component-level values are aggregated to describe overall conditions.

previous inspections and records of past defects found and/or corrected.

This information provides useful background to the survey of the facility's condition, revealing if work has recently taken place, recently been identified, or if needs have already been met, identified, or deferred. These documents may also reveal areas that require more careful review during the inspection process.

During the on-site assessment, the inspector will observe the condition of all components and subcomponents identified in Section 3.2. These components are expected to be readily visible and accessible, with information on less easily accessible features like services and systems gained via documentation and interview. This means that entering of limited access areas such as crawl spaces, utility pits, sloped roofs would not be necessary and that their condition can be observed from a point of access.

The inspector will assess each component and record the percentage of the component's quantity in each of the five defined condition categories. Generally speaking, area (e.g. building area in square footage) will be used to measure component quantities. Even if all the components in a given building are assessed with a single condition, building area can be used to combine results into a weighted rating for the component across multiple buildings.

Table 7 below details the assessment tasks for each of the components.

**Example: Condition Assessment Procedures**

**Question:** A facility consists of two buildings: a 50,000 square foot maintenance shop and 12,500 square foot fuel and wash building. The HVAC system for the maintenance shop is rated as 4: Good and the HVAC system for the fuel and wash building is rated as 3: Adequate. What is the rating for HVAC for the facility?

**Answer:** The total quantity for the HVAC system is 62,500 square feet. Of this, 80% (50,000/62,500) has a rating of 4: Good and 20% has a rating of 3: Adequate. Section 3.5 describes how these component-level values are aggregated to describe overall conditions

**Table 7 - Assessment Tasks**

ID	Components	Sub-Components
A.	Substructure	<ul style="list-style-type: none"> <li>Foundations: Inspect walls, columns, pilings, other structural components for signs of decay.</li> <li>Basement: Inspect non-foundation and structural components such as facing materials, insulation, slab, floor underpinnings, crawl spaces, etc.</li> <li>Establish overall condition for each substructure inspected. Calculate percentages using building footprint area if combining results for multiple buildings.</li> </ul>
B.	Shell	<ul style="list-style-type: none"> <li>Inspect superstructure / structural frame, including columns, pillars, and walls.</li> <li>Inspect building envelope including façade, curtain wall system, glazing system, exterior sealants, exterior</li> </ul>

ID	Components	Sub-Components
		<p>balconies, doors, stairways, parapets, fire escapes, gutters, downspouts.</p> <ul style="list-style-type: none"> <li>• Inspect windows, doors, and all finishes (paint, masonry).</li> <li>• Inspect roof, including roof surface (tiles, membrane, shingles, gravel etc.), gutters, eaves, skylights, flashing, chimney surrounds, and sealants, hardware and painted or coated surfaces. Note evidence of ponding, or roof leaks, significant age – and other indicators that repair may be necessary. Note age of roof(s) and whether warranty is still in effect.</li> <li>• Establish overall condition for each building inspected. Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and calculate percentages based on replacement cost.</li> </ul>
<b>C.</b>	<b>Interiors</b>	<ul style="list-style-type: none"> <li>• Inspect soundness and finish of drywall, partitions, interior doors, fittings, ceiling tiles, signage.</li> <li>• Inspect stairs including fire and access issues.</li> <li>• Inspect interior finishes, including materials used on walls, floors, and ceilings, such as tile, paint, and other coatings. Look for roughness and damage.</li> <li>• Establish overall condition for each building inspected. Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and calculate percentages based on replacement cost.</li> </ul>
<b>D.</b>	<b>Conveyance</b>	<ul style="list-style-type: none"> <li>• Inspect condition, function, and code compliance of elevators, escalators, lifts, and any other fixed apparatuses for the movement of goods or people.</li> <li>• Establish overall condition for elevator/escalator. Calculate percentages based on number of units, or based on replacement cost if known.</li> </ul>
<b>E.</b>	<b>Plumbing</b>	<ul style="list-style-type: none"> <li>• Inspect fixtures and pipes for water distribution, sanitary waste, rainwater drainage for damage or leaks including any drainage.</li> <li>• Establish overall condition for each building inspected. Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and</li> </ul>



ID	Components	Sub-Components
		calculate percentages based on replacement cost.
<b>F.</b>	<b>HVAC (Heating, ventilation, and air conditioning)</b>	<ul style="list-style-type: none"> <li>• Inspect systems and their components for energy supply, heating and cooling systems, distribution systems, terminal and package units, controls and instrumentation including testing and balancing, and chimneys. Specifically, inspect coils, housing, drains, and wiring and evaluate overall performance of the system.</li> <li>• Note apparent or reported age of the equipment, past material component replacements/ upgrades, and the apparent level of maintenance exercised. If heating equipment is shut down or not operational at the time of the walk-through survey, provide an opinion of the condition to the extent observed. Note refrigerants and fuels used and their suitability or need for improvement / upgrade.</li> <li>• Establish overall condition for each building inspected. Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and calculate percentages based on replacement cost.</li> </ul>
<b>G.</b>	<b>Fire Protection</b>	<ul style="list-style-type: none"> <li>• Inspect sprinklers, standpipes, hydrants, fire alarms, emergency lighting, smoke evacuation, stairwell pressurization, and any other specialized components relating to overall protection system and compliance.</li> <li>• Establish overall condition for each building inspected. Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and calculate percentages based on replacement cost.</li> </ul>
<b>H.</b>	<b>Electrical</b>	<ul style="list-style-type: none"> <li>• Inspect electrical service &amp; distribution, noting deficiencies or needed / recommended upgrades</li> <li>• Inspect lighting and branch wiring (interior and exterior), communications and security, noting deficiencies or needed / recommended upgrades</li> <li>• Examine other electrical system-related pieces such as lightning protection, generators, emergency lighting, and components related to electrical service and distribution such as conduit, boxes, solar panels and mountings for any damage wire chaffing or loose or corroded connections. Evaluate overall performance of the system.</li> <li>• Establish overall condition for each building inspected.</li> </ul>

ID	Components	Sub-Components
		<p>Calculate percentages using floor area if combining results for multiple buildings. Alternatively, if replacement costs are established, establish condition by subcomponent and calculate percentages based on replacement cost.</p>
<b>I.</b>	<b>Equipment / Fare Collection</b>	<ul style="list-style-type: none"> <li>• Inspect equipment, noting age, condition, and functional deficiencies.</li> <li>• For Maintenance Facilities, this is focused on major pieces of equipment integral to the function of the facility.</li> <li>• For Passenger Facilities, this item is focused on the fare collection system and any associated components.</li> <li>• Establish overall condition for piece of equipment. Calculate percentages based on number of units, or based on replacement cost if known.</li> </ul>
<b>J.</b>	<b>Site</b>	<ul style="list-style-type: none"> <li>• Inspect roadways/driveways and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt.</li> <li>• Inspect parking lots and associated signage, markings, and equipment. Look for cracking or settling of the concrete or asphalt</li> <li>• Inspect pedestrian areas and associated signage, markings, and equipment. Inspect the curbing and ramps for cracking, settling, holes, uneven surfaces and trip hazards. Pay special attention to wheelchair ramp areas and other ADA / access considerations</li> <li>• Site development such as fences, walls, and miscellaneous structures. Look for corrosion, structural integrity and condition of paint.</li> <li>• Landscaping, Site Utilities: Look for signs of drainage problems such as flooded areas, eroded soil and water damage to the asphalt and clogged storm drain inlets. Visually inspect the irrigation system, if installed. Look for signs of leaks, such as sagging areas in grass and/or pooling water. Look for dead spots in the grass indicating lack of water possibly caused by a mechanical failure.</li> <li>• Inspect passenger huts and benches for corrosion, paint condition, glass condition and damage.</li> <li>• Record percentage of the site area in each condition rating, omitting from the area the portion of the site occupied by buildings.</li> </ul>



### **Example – Classification of Facility Components**

**Question:** Major pieces of equipment in a maintenance facility include a bus washer valued at \$1 million, a paint booth valued at \$1.5 million, and three lifts, each valued at \$0.5 million. All of these are in good condition, except one lift that appears damaged and requires review. How should the Equipment component be rated?

**Answer:** In this case, replacement value is known and thus can be used to combine the ratings for different assets. The total replacement value for the Equipment component is \$4 million. Of this total 87.5% (\$3.5 million) is rated as 4: Good and 12.5% is rated as 1:Poor. Section 3.5 describes how these component-level values are aggregated to describe overall conditions.

## **3.5 Aggregation Approach**

Once the conditions of a given facility have been assessed the next step required to support NTD reporting is to calculate an overall condition for the facility. It is important to use a consistent, repeatable method for this calculation and there are several conventions used in similar applications. The text below describes alternative approaches to aggregating system-level condition data into a single overall value for facility condition. Provided an agency has sufficient data, the recommended approach is Alternative 1, to calculate a weighted average condition based on asset replacement cost. However, an agency may use any of the approaches described below.

### **Alternative 1. Weighted Average Condition**

This approach requires quantifying the replacement cost for each facility component. Given these replacement costs, the average rating is calculated for each component, and an overall rating is calculated by weighting each component by the component replacement cost. The specific steps in the calculation are:

**Step 1:** Calculate the average rating by component. Given the percentage of each component assigned each rating value, the average rating for the component is calculated as follows:

$$CR = p_1 + 2p_2 + 3p_3 + 4p_4 + 5p_5$$

where  $CR$  is the component rating and  $p_i$  is the percentage of the component with a condition rating of  $i$ .

**Step 2:** Calculate the overall rating. Given the component ratings and component replacement costs the overall facility condition rating may be expressed as:

$$OR = \frac{\sum_i CR_i RC_i}{\sum_i RC_i}$$

where  $OR$  is the overall rating,  $CR_i$  is the rating for component  $i$  and  $RC_i$  is the replacement cost for component  $i$ .

**Step 3:** Round off the rating value. The overall rating for the facility would be rounded off to the nearest integer value and this value reported for the facility. If the fractional portion of the rating is less than 0.5 the rating would be rounded down; if it is 0.5 or greater it would be rounded up.

### **Example – Calculating Component Condition Using Alternative 1**

**Question:** The Equipment component of a facility has been inspected based on asset value, with 87.5 rated 4 and 12.5 rated 1. What is the overall rating?

**Answer:** The overall rating for Equipment is 3.625 ( $4 * 0.875 + 1 * 0.125$ )

### **Example – Calculating Overall Condition Using Alternative 1**

The following is an example calculation overall rating using Alternative 1- Weighted Average Condition.

Component	Value	Rating
Substructure	2.4	1.87
Shell	2.2	2.11
Interiors	0.9	3.10
Conveyance	1.5	2.38
Plumbing	1.5	2.08
HVAC	1.1	2.83
Fire Protection	1.6	2.91
Electrical	1.0	2.48
Equipment	1.1	3.16
Site	0.4	2.90
<b>Total</b>	<b>13.7</b>	<b>2.44</b>

Based on this method the average rating is 2.44. This rounds to an overall rating of 2.

## **Alternative 2. Median Value**

If an agency has limited data on component replacement costs, an alternative approach for calculating the overall condition of a facility is to determine the median value for each component and the median value between the different components. The specific steps in the calculation are:

**Step 1:** Determine median value of each component. Calculate this by tabulating the component quantity inspected at each condition rating, and use as the overall component rating the lowest rating achieved by at least half of the component quantity. For instance, if 60% of a component quantity has a rating of 2, 20% has a rating of 3, and 20% has a rating of 4, then the overall rating would be 2, as over half of the component quantity has a rating of 2 or less. Likewise, if half of the quantity has a rating of 1 and half has a rating of 5, then the overall rating would be 1.

**Step 2:** Determine median value across components. Calculate this by tabulating the number of components inspected at each condition rating, and use as the overall rating the lowest rating achieved by at least half of the components. For instance, if 10 components were inspected and the results were evenly distributed between ratings (2 components with each of the 5 rating values), the overall rating would be 3 as at least half of the ratings would have a value of 3 or less.

### ***Example – Calculating Component Condition Using Alternative 2***

**Question:** For the Conveyance component replacement values are not known and the inspector has rated individual units. 2 elevators are rated as 5: Excellent and 2 escalators are rated as 2: Marginal. What is the overall rating for Conveyance?

**Answer:** In this case, the agency must use Alternative 2 - Median Value. 50% of the units have a rating of 2 or worse. Thus, the overall rating is 2: Marginal.

### ***Example – Calculating Overall Condition Using Alternative 2***

The following is an example calculation of overall rating for a passenger facility using Alternative 2 – Median. Based on this method the overall rating is 2, as 5 of the 10 components have a rating of 2 or worse.

<b>Component</b>	<b>Rating</b>
Substructure	2
Shell	1
Interiors	3
Conveyance	2
Plumbing	2
HVAC	1
Fire Protection	3
Electrical	3
Fare Collection	3
Site	4
<b>Total</b>	<b>2</b>

### Alternative 3. Alternative Weighting

An agency may use an alternative approach provided the approach is consistent, repeatable, and that it yields a single rating value for each facility using the five-point TERM condition scale. In particular, an agency may prefer to calculate a weighted average such as that illustrated in Alternative 1, but lacks sufficient data on replacement costs, or faces a situation in which it is simply not meaningful to attempt to quantify individual components of a facility. For example, an agency may choose to compute a weighted average weighting each component by a factor that serves as a proxy for asset value and/or criticality. If an agency does choose to use such an alternative approach the calculation approach and rationale for its use must be documented. Component ratings must be retained in the event an agency changes its aggregation approach and needs to recalculate previously-reported conditions.

### 3.6 Quality Management

FTA's *Quality Management System Guidelines* describe basic concepts of quality management and how to establish a quality management program in a transit agency. This document was written primarily to address quality as it applies to capital projects. However, the basic concepts described in the guidelines apply to other transit agency activities. Also, the document includes an appendix describing how to apply quality management concepts to operations and maintenance activities that may also be applied to activities such as assessing asset conditions.

As described in the guidelines, the term Quality Control (QC) generally refers to “the act of taking measurements, testing, and inspecting a process or product to assure that it meets specification.” In the context of a condition assessment, QC is concerned with activities such as verifying that condition assessment results are captured and recorded accurately. In contrast, Quality Assurance (QA) is a more proactive set of activities. QA “emphasizes actions at a management level that directly improve the chances that QC actions will result in a product or service that meets requirements.”

For instance, a QA program might emphasize the need for inspector training to help improve the overall quality of the condition assessment process. In practice, QA and QC strategies are employed together as part of an overall quality management program that uses a combination of proactive and reactive approaches to maximize quality.

Below are key quality elements described in Section 2 of the FTA guidelines applicable to supporting a high quality condition assessment process. All agencies must incorporate consideration of these elements into the condition assessment process. Larger agencies may document specific QA/QC activities undertaken to enhance the quality of their condition assessments. The key quality elements and activities relevant to each include:

- **Management Responsibility:** responsibility for condition assessment QA/QC must be clearly delineated.
- **Documented Quality Management System:** the agency's approach for QA/QC must be documented.
- **Design Control:** in the context of condition assessment, this refers to establishing condition assessment procedures, such as those described in this document. If an agency has established additional or alternative procedures to performing condition assessments besides those described here, they must be well documented.
- **Document Control:** all documents used to support the condition assessment process need to be under document control to verify that staff are using the correct versions of the documents when assessing conditions. This includes documentation of procedures, condition rating descriptions, assessment forms and other documents.

**Quality Control (QC)** is the act of taking measurements, testing, and inspecting a process or product to assure that it meets specification.

**Quality Assurance (QA)** is a more proactive set of activities that emphasizes actions at a management level that directly improve the chances that QC actions will result in a product or service that meets requirements.

- **Product Identification and Traceability:** as inspections are performed it is important to have an approach to identifying when an inspection was performed and what facility or system was inspected. Though seemingly straightforward this tracking can become complicated if an agency has a large number of assets and/or lacks a well defined asset register.
- **Inspection and Testing:** inspection procedures must be clearly established. Over time an agency may need to review and supplement its procedures based on experience with the condition assessment process.
- **Inspection, Measuring and Test Equipment:** the condition assessment approach described here relies on visual inspections. While recognizing that visual inspections are inherently subjective, it is important for agencies with large facility inventories to monitor inspection results to verify that similar conditions are assessed in a similar fashion between inspectors. Basic techniques used to improve quality include performing inspections in teams and rotating inspectors between facilities (coupled with follow-up to determine the cause of any significant changes in condition observed between different inspectors). No specialized equipment is required to implement the condition assessment approach described here. However, if an agency adopts procedures utilizing any specialized equipment for supporting condition assessment, such devices are expected to be carefully calibrated.
- **Inspection and Test Status:** it is important to track inspection status and verify that inspections are conducted in a timely fashion.
- **Quality Records:** an agency must have an approach to keeping records related to the condition assessment process. Ideally condition assessment results must be kept in a machine-readable form (e.g., a database) to facilitate their use and minimize risk of data loss.
- **Training:** particularly given the condition inspection process is based largely on visual inspections, it is imperative to provide training to all inspectors to improve the consistency of condition assessments and minimize errors.

## 4.0 Appendices

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### 4.1 Definitions

*Note: Definitions are based largely on those in ASTM Standard E2018-08 and FTA's NTD Glossary.*

**Asset Inventory Module:** The interface through which asset inventory and condition data are collected for the NTD.

**ASTM:** American Society of Testing and Materials

**Building Envelope:** Components making up the enclosure of the building that protects the building's interior from outside components, namely the exterior walls, roof and soffit areas.<sup>3</sup>

**Building Systems:** Interacting or independent components or assemblies, which form single integrated units that comprise a building and its site work, such as, pavement and flatwork, structural frame, roofing, exterior walls, plumbing, HVAC, electrical, etc.<sup>4</sup>

**Component:** a fully functional portion of a building system, piece of equipment, or building element.

**HVAC:** Heating, ventilating and air conditioning.

**Physical Deficiency:** Conspicuous defects or significant deferred maintenance. This may include life-safety/building code violations and material systems, components, or equipment that are approaching, have reached, or have exceeded their typical useful life.<sup>5</sup>

**Readily Accessible:** Available for observation at the time of a walk-through survey; does not require the removal or relocation of materials or personal property, such as furniture, floor, wall, or ceiling coverings; is safe to observe.<sup>6</sup>

**Routine Maintenance:** A repair that does not require specialized equipment, professional services, or contractors, but rather can be corrected within the budget and skill set of typical property maintenance staff.<sup>7</sup>

**State of Good Repair Program:** The FTA State of Good Repair Program is a formula program that replaced the Fixed Guideway Modernization program. It provides capital assistance to maintain fixed guideway and high intensity bus systems in a state of good repair. It is further defined in 49 U.S.C. Section 5337.

**Structural Frame:** The components or building system that supports the building's weight.<sup>8</sup>

**Transit Asset Management Plan:** An inventory of all transit system assets and a plan for their preservation using lowest life cycle cost methodologies.

**Useful Life:** The average amount of time in years that an item, component, or system is estimated to function, when installed new and assuming routine maintenance is practiced.<sup>9</sup>

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<sup>3</sup> ASTM Standard E2018-08

<sup>4</sup> Ibid

<sup>5</sup> Ibid

<sup>6</sup> Ibid



<sup>7</sup> Ibid

<sup>8</sup> Ibid

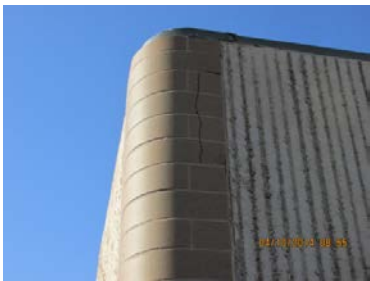
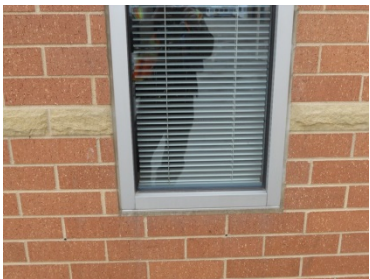
<sup>9</sup> ASTM Standard E2018-08


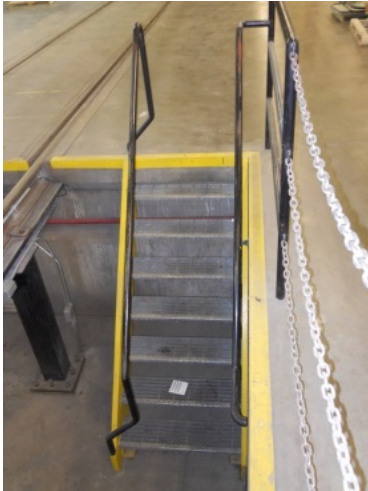
## 4.2 Condition Rating Descriptions by Component



### 4.2.1 Condition Rating Descriptions by Component: Administrative/ Maintenance Facilities



Component	Rating	Description
<b>A. Substructure</b> <ul style="list-style-type: none"> <li>Foundation</li> <li>Basement</li> </ul>  	5: Excellent	New construction, no visible defects.
	4: Good	Minor improvement or superficial repairs needed, can be addressed through routine maintenance. No significant visible damage such as cracking, spalling, sagging, rust, or shifting.
	3: Adequate	Needs some repair. There may be surface cracking, rust, shifting, and spalling on components. Insulation or drainage may need maintenance. Substructure is cosmetically “fair”, and functioning as designed; within useful life.
	2: Marginal	Components need extensive repair at a minimum. They show signs of significant cracking, sagging, rust, shifting, and spalling / decay. Significant insulation or drainage issues may be present. There are no apparent safety issues, however. Components are functional but have exceeded their useful lives.
	1: Poor	Components show critical defects affecting function, health, or safety. They are visibly in poor condition. They cannot be repaired; must be replaced. They have exceeded their useful life and warrant structural review.







Component	Rating	Description
<b>B. Shell</b> <ul style="list-style-type: none"> <li>• Superstructure / structural frame, including columns, pillars, and walls</li> <li>• Roof: Roof surface, gutters, eaves, skylights, chimney surrounds</li> <li>• Exterior: Windows, doors, and all finishes (paint, masonry)</li> <li>• Shell appurtenances: Balconies, fire escapes, gutters, downspouts</li> </ul>  	5: Excellent	New construction, no visible defects or damage
	4: Good	Minor improvement needed; sub-components are more than five years old but are functioning without issue under routine maintenance. Only minor superficial damage or defect. No sagging, corrosion, cracking, shifting, or leaks.
	3: Adequate	Repairs are needed. Component or sub-components show signs of minor cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically “fair”, but functioning as designed.
	2: Marginal	Component or sub-components show signs of significant cracking, sagging, swelling, corrosion, leaks, or shifting. Significant repairs are needed, but there currently does not appear to be a safety issue on any single sub-component.
	1: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visibly poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.

Component	Rating	Description
<b>C. Interiors</b> <ul style="list-style-type: none"> <li>Partitions: Walls, interior doors, fittings, signage</li> <li>Stairs: Interior stairs and landings</li> <li>Finishes: Materials used on walls, floors, and ceilings</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor improvement needed; only shows superficial damage or defect. Minimal signs of wear, no major problems, minimal signs of deterioration. Primarily cosmetic issues with no functional impact, which can be addressed through routine maintenance.
	3: Adequate	Repairs are needed. Component or sub-components show signs of cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically “fair”, but functioning as designed.
	2: Marginal	Interior shows deterioration: cracking, sagging, swelling, corrosion, leaks, etc. Finishes are worn. Significant repairs or upgrades are needed, but there currently does not appear to be a safety issue.
	1: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visible poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.



Component	Rating	Description
<b>D. Conveyance</b> <ul style="list-style-type: none"> <li>Elevators</li> <li>Escalators</li> <li>Lifts: any other such fixed apparatuses for the movement of goods or people.</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor improvement needed; only shows superficial damage or defect with no functional impact. Issues are addressed via routine maintenance.
	3: Adequate	Repairs are needed; components show signs of corrosion and damage. They are cosmetically "fair", but functioning as intended under maintenance schedule.
	2: Marginal	Component or sub-components need extensive repair at a minimum. More substantial part replacement and/or repair is frequent. There currently does not appear to be any safety issue. Maintenance schedule is interrupted by more frequent breakdowns.
	1: Poor	Component or sub-components have critical defects affecting function. They are in visibly poor condition and must be replaced rather than repaired. Maintenance schedule is reactive rather than proactive due to frequent malfunction. Apparatuses have exceeded their useful life and warrant detailed review.


Component	Rating	Description
<b>E. Plumbing</b> <ul style="list-style-type: none"> <li>• Fixtures</li> <li>• Water distribution</li> <li>• Sanitary waste</li> <li>• Rain water drainage</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor wear and tear or superficial deterioration or defect with no functional impact typically addressed through routine maintenance. No corrosion or leaks.
	3: Adequate	Repairs are needed; some deterioration exists, such as corrosion. Repairs are typical to more intensive routine maintenance and system is functioning as designed.
	2: Marginal	Plumbing system components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System has defects affecting function and necessitating frequent maintenance. Plumbing is in poor condition and must be replaced rather than repaired. The system has exceeded its useful life and warrants detailed review.

Component	Rating	Description
<b>F. HVAC</b> <ul style="list-style-type: none"> <li>• Energy supply</li> <li>• Heating / cooling generation and distribution systems</li> <li>• Testing, balancing, controls and instrumentation</li> <li>• Chimneys and vents</li> </ul>  	5: Excellent	New construction, no visible defects or damage. Meets efficiency and capacity goals and maintains desired temperature and air quality throughout the facility.
	4: Good	Minor improvements needed, may be slightly outdated and less efficient and consistent. Minor deterioration or defect with no functional impact typically addressed through routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets needs. Still within its useful life.
	2: Marginal	System has exceeded its useful life; fails to meet standards or needs. Components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.


Component	Rating	Description
<b>G. Fire Protection</b> <ul style="list-style-type: none"> <li>• Sprinklers</li> <li>• Standpipes</li> <li>• Hydrants and other fire protection specialties</li> </ul>  	5: Excellent	New system, no visible defects or damage. Meets facility needs.
	4: Good	Minor wear and tear; system may be slightly outdated but still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets requirements. Still within its useful life.
	2: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.





Component	Rating	Description
<b>H. Electrical</b> <ul style="list-style-type: none"> <li>Electrical service &amp; distribution</li> <li>Lighting &amp; branch wiring (interior and exterior)</li> <li>Communications &amp; security</li> <li>Other electrical system-related pieces such as lightning protection, generators, and emergency lighting</li> </ul>  	5: Excellent	New system, no apparent defects. Meets facility needs.
	4: Good	Minor deterioration; system may be slightly outdated but still meets needs of facility with minimal routine maintenance. Limitation on system flexibility such as future expansion.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. There is limited flexibility for improvement. However, the system meets requirements and is still within its useful life.
	2: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.



Component	Rating	Description
<b>I. Equipment</b> <ul style="list-style-type: none"> <li>Equipment related to the function of the facility</li> <li>Includes maintenance or vehicle service equipment</li> </ul> 	5: Excellent	New equipment, no apparent defects, serving the needs of the facility.
	4: Good	Minor deterioration; equipment may be slightly outdated but still meets needs of facility with minimal routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are considerable. However, equipment meets needs and is still within its useful life.
	2: Marginal	Equipment has exceeded useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum.
	1: Poor	Equipment is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.






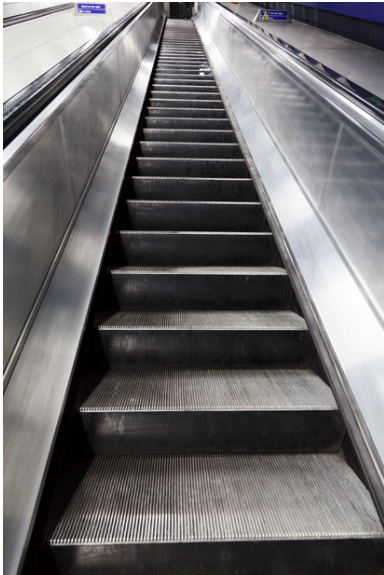
Component	Rating	Description
<b>J. Site</b> <ul style="list-style-type: none"> <li>Roadways/driveways and associated signage, markings, and equipment</li> <li>Parking lots and associated signage, markings, and equipment</li> <li>Pedestrian areas and associated signage, markings, and equipment</li> <li>Site development such as fences, walls, and miscellaneous structures</li> <li>Landscaping and irrigation</li> <li>Site Utilities</li> </ul> 	5: Excellent	New construction, no apparent defects, serving the needs of the facility.
	4: Good	Minor deterioration, primarily cosmetic defects such as damaged signage or small pavement cracks, landscaping updates. Still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, such as signs needing replacement and pavement cracks needing fill. More routine maintenance is needed. However, site is still functioning as designed.
	2: Marginal	Site sub-components are worn and need extensive repair at a minimum. Pavement may show damage beyond what can be fixed with crack filler (over 2" wide / potholes). Signage may be outdated, fences need replacement, irrigation no longer efficient, etc.
	1: Poor	Site has critical defects affecting function, health, or safety. Issues are beyond repair and warrant detailed review.



## 4.2.2 Condition Rating Descriptions by Component: Passenger Facilities

Component	Rating	Description
<b>A. Substructure</b> <ul style="list-style-type: none"> <li>Foundation</li> <li>Basement</li> </ul>  	5: Excellent	New construction, no visible defects.
	4: Good	Minor improvement or superficial repairs needed, to be addressed through routine maintenance. No significant visible damage such as cracking, spalling, sagging, rust, or shifting.
	3: Adequate	Needs some repair. There may be surface cracking, rust, shifting, and spalling on components. Insulation or drainage may need maintenance. Substructure is cosmetically “fair”, and functioning as designed; within useful life.
	2: Marginal	Components need extensive repair at a minimum. They show signs of significant cracking, sagging, rust, shifting, and spalling / decay. Significant insulation or drainage issues may be present. There are no apparent safety issues, however. Components are functional but have exceeded their useful lives.
	1: Poor	Components show critical defects affecting function, health, or safety. They are visibly in poor condition. They cannot be repaired; must be replaced. They have exceeded their useful life and warrant structural review.



Component	Rating	Description
<b>B. Shell</b> <ul style="list-style-type: none"> <li>• Superstructure / structural frame, including columns, pillars, and walls</li> <li>• Roof: Roof surface, gutters, eaves, skylights, chimney surrounds</li> <li>• Exterior: Windows, doors, and all finishes (paint, masonry)</li> <li>• Shell appurtenances: Balconies, fire escapes, gutters, downspouts</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor improvement needed; sub-components are more than five years old but are functioning without issue under routine maintenance. Only minor superficial damage or defect. No sagging, corrosion, cracking, shifting, or leaks.
	3: Adequate	Repairs are needed. Component or sub-components show signs of minor cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically “fair”, but functioning as designed.
	2: Marginal	Component or sub-components show signs of significant cracking, sagging, swelling, corrosion, leaks, or shifting. Significant repairs are needed, but there currently does not appear to be a safety issue on any single sub-component.
	1: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visibly poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.



Component	Rating	Description
<b>C. Interiors</b> <ul style="list-style-type: none"> <li>Partitions: Walls, interior doors, fittings, signage</li> <li>Stairs: Interior stairs and landings</li> <li>Finishes: Materials used on walls, floors, and ceilings</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor improvement needed; only shows superficial damage or defect. Minimal signs of wear, no major problems, minimal signs of deterioration. Primarily cosmetic issues with no functional impact, which can be addressed through routine maintenance.
	3: Adequate	Repairs are needed. Component or sub-components show signs of cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically “fair”, but functioning as designed.
	2: Marginal	Interior shows deterioration: cracking, sagging, swelling, corrosion, leaks, etc. Finishes are worn. Significant repairs or upgrades are needed, but there currently does not appear to be a safety issue.
	1: Poor	Component or sub-components have critical defects affecting function, health, or safety. They are in visible poor condition and must be replaced rather than repaired. They have exceeded their useful life and warrant structural review.

Component	Rating	Description
<b>D. Conveyance</b> <ul style="list-style-type: none"> <li>Elevators</li> <li>Escalators</li> <li>Lifts: any other such fixed apparatuses for the movement of goods or people</li> </ul>	5: Excellent	New construction, no visible defects or damage.
 	4: Good	Minor improvement needed; only shows superficial damage or defect with no functional impact. Issues are addressed via routine maintenance.
	3: Adequate	Repairs are needed; components show signs of corrosion and damage. They are cosmetically “fair”, but functioning as intended under maintenance schedule.
	2: Marginal	Component or sub-components need extensive repair at a minimum. More substantial part replacement and/or repair is frequent. There currently does not appear to be any safety issue. Maintenance schedule is interrupted by more frequent breakdowns.
	1: Poor	Component or sub-components have critical defects affecting function. They are in visibly poor condition and must be replaced rather than repaired. Maintenance schedule is reactive rather than proactive due to frequent malfunction. Apparatuses have exceeded their useful life and warrant detailed review.


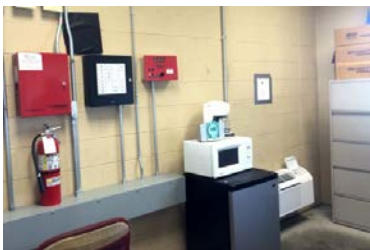
Component	Rating	Description
<b>E. Plumbing</b> <ul style="list-style-type: none"> <li>• Fixtures</li> <li>• Water distribution</li> <li>• Sanitary waste</li> <li>• Rain water drainage</li> </ul>  	5: Excellent	New construction, no visible defects or damage.
	4: Good	Minor wear and tear or superficial deterioration or defect with no functional impact typically addressed through routine maintenance. No corrosion or leaks.
	3: Adequate	Repairs are needed; some deterioration exists, such as corrosion. Repairs are typical to more intensive routine maintenance and system is functioning as designed.
	2: Marginal	Plumbing system components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System has defects affecting function and necessitating frequent maintenance. Plumbing is in poor condition and must be replaced rather than repaired. The system has exceeded its useful life and warrants detailed review.





Component	Rating	Description
<b>F. HVAC</b> <ul style="list-style-type: none"> <li>• Energy supply</li> <li>• Heating / cooling generation and distribution systems</li> <li>• Testing, balancing, controls and instrumentation</li> <li>• Chimneys and vents</li> </ul>  	5: Excellent	New construction, no visible defects or damage. Meets efficiency and capacity goals and maintains desired temperature and air quality throughout the facility.
	4: Good	Minor improvements needed, may be slightly outdated and less efficient and consistent. Minor deterioration or defect with no functional impact typically addressed through routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets needs. Still within its useful life.
	2: Marginal	System has exceeded its useful life; fails to meet standards or needs. Components need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.

Component	Rating	Description
<b>G. Fire Protection</b> <ul style="list-style-type: none"> <li>• Sprinklers</li> <li>• Standpipes</li> <li>• Hydrants and other fire protection specialties</li> </ul>  	5: Excellent	New system, no visible defects or damage. Meets facility needs.
	4: Good	Minor wear and tear; system may be slightly outdated but still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. With these, the system meets requirements. Still within its useful life.
	2: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.



Component	Rating	Description
<b>H. Electrical</b> <ul style="list-style-type: none"> <li>Electrical service &amp; distribution</li> <li>Lighting &amp; branch wiring (interior and exterior)</li> <li>Communications &amp; security</li> <li>Other electrical system-related pieces such as lightning protection, generators, and emergency lighting</li> </ul>  	5: Excellent	New system, no apparent defects. Meets facility needs.
	4: Good	Minor deterioration; system may be slightly outdated but still meets needs of facility with minimal routine maintenance. Limitation on system flexibility such as future expansion.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are significant. There is limited flexibility for improvement. However, the system meets requirements and is still within its useful life.
	2: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.

Component	Rating	Description
<b>I. Fare Collection</b> <ul style="list-style-type: none"> <li>Equipment related fare collection</li> <li>May also include other major equipment related to the function of the facility</li> </ul> 	5: Excellent	New equipment, no apparent defects, serving the needs of the facility.
	4: Good	Minor deterioration; equipment may be slightly outdated but still meets needs of facility with minimal routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are considerable. However, equipment meets needs and is still within its useful life.
	2: Marginal	Equipment has exceeded useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum.
	1: Poor	Equipment is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.

Component	Rating	Description
<b>J. Site</b> <ul style="list-style-type: none"> <li>Roadways/driveways and associated signage, markings, and equipment</li> <li>Parking lots and associated signage, markings, and equipment</li> <li>Pedestrian areas and associated signage, markings, and equipment</li> <li>Site development such as fences, walls, and miscellaneous structures</li> <li>Landscaping and irrigation</li> <li>Site Utilities</li> </ul> 	5: Excellent	New construction, no apparent defects, serving the needs of the facility.
	4: Good	Minor deterioration, primarily cosmetic defects such as damaged signage or small pavement cracks, landscaping updates. Still meets needs of facility with routine maintenance.
	3: Adequate	Repairs are needed; some deterioration exists, such as signs needing replacement and pavement cracks needing fill. More routine maintenance is needed. However, site is still functioning as designed.
	2: Marginal	Site sub-components are worn and need extensive repair at a minimum. Pavement may show damage beyond what can be fixed with crack filler (over 2" wide / potholes). Signage may be outdated, fences need replacement, irrigation no longer efficient, etc.
	1: Poor	Site has critical defects affecting function, health, or safety. Issues are beyond repair and warrant detailed review.

### 4.3 Sample Administrative/Maintenance Facility Condition Assessment Form

Inspection Date:
Inspector Name:
Facility Name:
Address/Location:

ID	Component	Asset Quantity	Unit of Measure	Percent of Asset Quantity by Condition				
				5 Excellent	4 Good	3 Adequate	2 Marginal	1 Poor
A.	Roof							
B.	Shell							
C.	Interior							
D.	Conveyance							
E.	Plumbing							
F.	HVAC							
G.	Fire Protection							
H.	Electrical							
I.	Equipment							
J.	Site							

## 4.4 Sample Passenger Facility Condition Assessment Form

Inspection Date:
Inspector Name:
Facility Name:
Address/Location:

ID	Component	Asset Quantity	Unit of Measure	Percent of Asset Quantity by Condition				
				5 Excellent	4 Good	3 Adequate	2 Marginal	1 Poor
A.	Roof							
B.	Shell							
C.	Interior							
D.	Conveyance							
E.	Plumbing							
F.	HVAC							
G.	Fire Protection							
H.	Electrical							
I.	Fare Collection							
J.	Site							

## 4.5 References

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