

TAM Facility Performance Measure Reporting Guidebook:

# Condition Assessment Calculation

Federal Transit Administration

U.S. Department of Transportation

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Update Appendix B



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 Moving Ahead for Progress in the 21st Century Act (MAP–21) (Pub. L. 112–141, July 6, 2012), established new Transit Asset Management (TAM) data-reporting requirements at 49 U.S.C. § 5326. FTA recently promulgated the TAM rule at 49 CFR part 625 to effect this statutory requirement. The objective of this guidebook is to detail the methodology for transit agencies to use in fulfilling several of those requirements.

In accordance with 49 U.S.C. § 5335, agencies are required to calculate and report new data elements to the National Transit Database (NTD). This guidebook focuses on data elements regarding facility conditions and performance measures for administrative and maintenance facilities, as well as for passenger and parking facilities.

New and updated regulations require transit agencies reporting to the NTD to include condition information on assets reported to the database. To satisfy this new requirement, the condition of each facility supporting transit operations, must be reported to the NTD at least once every four years.

The TAM rule established performance measures to be reported to the NTD Asset Inventory Module (AIM) at 49 CFR part 625, Subpart D - Performance Management. This guidebook outlines the calculation of the Facility Condition Assessment for reporting to the NTD. In addition to AIM reporting, the TAM rule requires asset inventory and asset condition assessments at a level of detail sufficient to monitor and predict the performance of assets and to inform investment prioritization in the TAM Plan. Facility condition assessments must be conducted by assessing the condition of and assigning a rating for facility assets using FTA's Transit Economic Requirements Model (TERM) scale. This guidebook provides procedures for compliance with the condition assessment requirement.

Information on facility conditions is intended to supplement other facility-related information entered in the NTD AIM. The NTD AIM will be available for optional reporting in 2017, one year prior to mandatory reporting.

## 1.2 Intended Audience

This guidebook is intended for any organization receiving funds from FTA that owns, operates, or manages transit capital assets for which it has direct capital responsibility. While this guidebook may be helpful for those who occupy Accountable Executive positions at their agencies, it is specifically directed at those who will conduct or report transit asset condition assessments, and those who will compile the agency's asset inventory.

Agencies that share direct capital responsibility for facility assets should determine how to coordinate condition assessment reporting – FTA does not require each entity to conduct a separate assessment, although each will report the result.

## 1.3 Document Organization

This guidebook is organized into six main sections:

- **Section 1.0** describes the scope of this document and provides a brief policy background, linking this guidance to the requirements of the NTD.
- **Section 1.0** identifies facility types and rating levels.
- **Section 2.0** provides instructions on how to assess the condition of facility.
- **Section 3.0** offers solutions to aggregating condition ratings to determine an overall facility rating.
- **Section 4.0** provides instructions on how to calculate performance measures for each facility asset category.
- **Section 5.0** outlines data requirements and definitions relating to reporting facility condition data.

## 1.4 Legislative Background

The guidance presented here is intended to help agencies fulfill the NTD facility condition data reporting requirements of 49 U.S.C. § 5335. Section 5335 contains several provisions impacting NTD reporting requirements. Of note is a new requirement to report “asset condition information” to the NTD. FTA effected this statutory requirement with the recent promulgation of the TAM rule at 49 CFR part 625. The rule includes definitions for “transit asset management plan”, “state of good repair” (SGR), and establishes performance measures for equipment, rolling stock, infrastructure, and facilities asset categories. These requirements are also included with the Asset Inventory Reporting notice of 49 CFR part 630 that was published in the Federal Register on July 26, 2016 (81 FR 48971).

This guidebook offers a methodology for defining, gathering, calculating and reporting facility condition data to NTD and links these requirements to TAM plan requirements.

## 1.5 Inventory

The NTD AIM stores basic information on assets and infrastructure applied by U.S. transit agencies. A pilot version of the AIM was made available as a Microsoft Excel spreadsheet on the NTD webpage. The data elements shown on the pilot version will be incorporated as part of the online NTD reporting system and will be available for optional reporting in 2017. Inventory data must be reported to the NTD AIM. Specific form numbers, by asset category, will be provided on the NTD website.

The NTD facility asset inventory<sup>1</sup> forms gather required information on administrative, maintenance, passenger, and parking facilities, 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 full or partial capital responsibility.

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<sup>1</sup> See full instructions from the latest Asset Inventory Reporting Manual (2015), pages 20 and 26.

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.

## **1.6 Steps to Conducting & Reporting a Facility Condition Assessment**

Agencies are required to report the overall condition of all facilities for which they have direct or shared capital responsibility using a single numeric value. Assessing facility asset condition is the focus of this guidebook. Each facility can be divided into primary rating levels and secondary rating levels. Information in the following sections of this guidebook will explain approaches to aggregating condition data for reporting.

Before performing any assessments, it is first necessary for agencies to determine exactly what items must be assessed. Agencies should first divide facilities into primary rating levels. Some agencies may determine the primary level rating by inspection and assessing each secondary level.

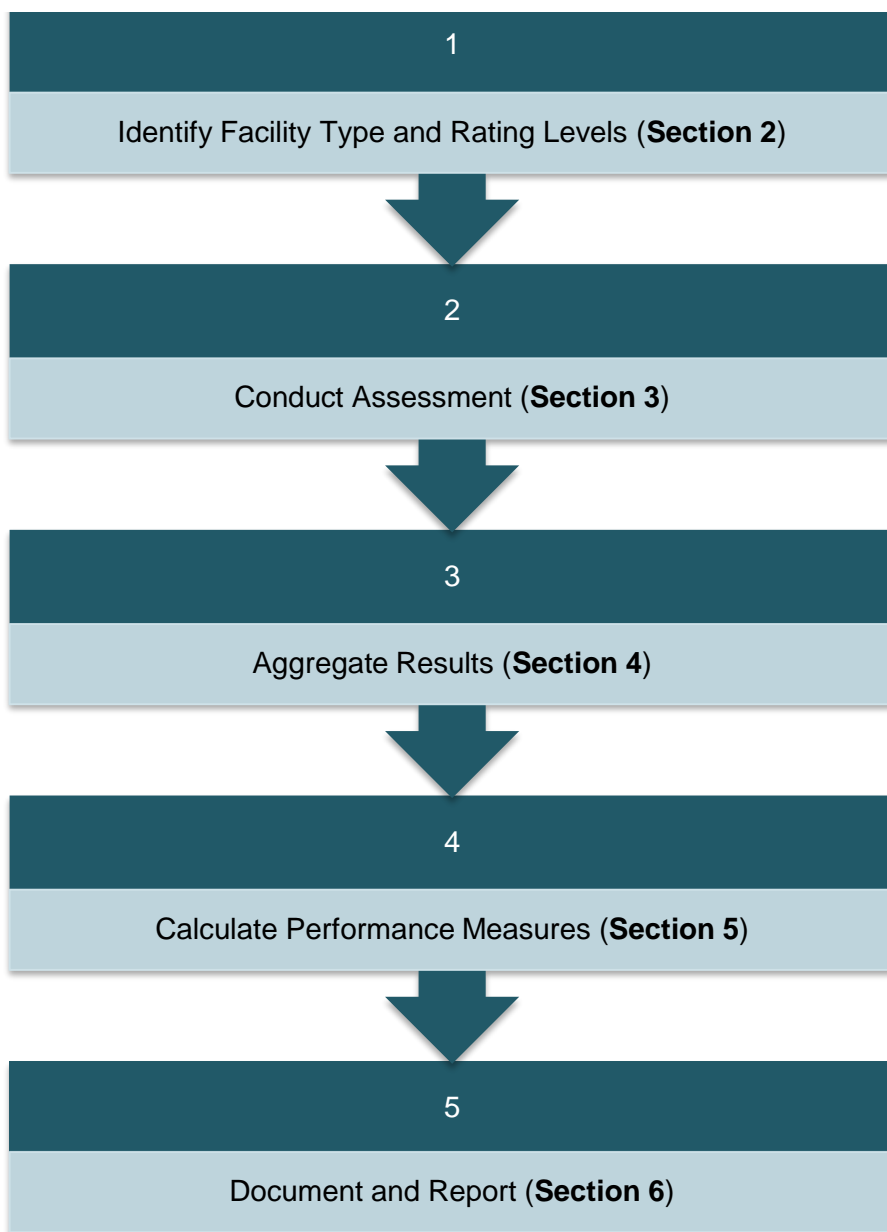
Section 2.1 of this guidebook describes the recommended levels for inclusion in a condition assessment. Next, Section 2.2 describes how to apply the five-point condition scale to each, providing condition state language for each. Once the identification of primary and secondary level to rate and condition state language are defined, the next step is to perform the condition assessment, described further in Section 2.3.

Next, agencies should aggregate the condition ratings of secondary (if any ratings) and then primary level facility ratings to determine the overall condition rating of each facility. Section 3.0 describes how to aggregate the data to determine an overall facility condition rating.

Using the condition rating for each facility, agencies must then calculate a performance measure for their administrative and maintenance facilities and a performance measure for their passenger and parking facilities. Calculating performance measures is reviewed in Section 4.0. Finally, agencies must report asset conditions and asset category performance measures, set targets, and prepare any required supporting documentation. Data requirements and reporting is discussed in Section 5.0.

The figure below illustrates the basic steps to assessing and reporting facility conditions and performance measures.

*Figure 1. Steps to Assessing and Reporting Facility Conditions and Performance Measures*



## **1.0 Identify Facility Types and Rating Levels**

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This section defines the facility data agencies must collect. The NTD Policy Manual offers definitions on the building types agencies must assess, while the NTD AIM details the specific data that must be reported for each facility type.

### **1.1 Facility Types**

Condition assessment data must be gathered on all facilities for which an agency has direct

capital responsibility. A single facility is defined as one building, so a compound with four buildings would be four facilities. The 2017 AIM Manual itemizes all facility types that will be reported to the NTD. Each of these facility types and any other building where transit administrative, maintenance, or operations functions are conducted should be considered an independent facility even when it is adjacent to or on the same property as another building. 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.

The guidebook does not list each possible type of facility but instead provides general descriptions to allow agencies to assess which facility type best fits their facility. Additionally, while the final rule provides a minimum standard for regulation, if an entity elects to inventory and conduct condition assessments on facilities that are beyond the standard, they must follow the same methodology required by regulated facilities.

There are two overarching *groups* of facilities: 1) Administrative and Maintenance; and 2) Passenger and Parking; and four *types* of facilities that fall under them. Transit agencies will submit condition assessments for each facility, which will be aggregated to calculate the facility condition performance measure metric. Agencies must submit one performance measure metric and one target for administrative and maintenance facilities, and one metric and target for passenger and parking facilities.

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

#### **Administrative Facilities**

Administrative facilities are typically offices that 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**

Maintenance facilities are those where routine maintenance and repairs or heavy maintenance or unit rebuilds are conducted. Agencies must not report maintenance facilities where third-party vendors perform services, such as a local gasoline service or body shop. Note that characterizing a facility as one maintenance facility type over another will not alter the maintenance and administrative facility performance measure. For extensive list and definitions of maintenance facility types visit the NTD glossary.

### **1.1.2 Passenger and Parking Facilities**

#### **Passenger 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 inventory data for all passenger stations the agency uses in public transportation even if the agency does not own the stations.

Passenger stations are significant structures on 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, 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.

### **Parking Facilities**

Parking facilities include park & ride lots as well as parking garages. Note that passenger and parking facilities are often collectively referenced as “passenger facilities.” Parking facilities are those immediately adjacent to passenger facilities.

## **1.2 Condition Assessment Measure – TERM Scale**

The condition measure used in the NTD is the five-point scale used by FTA's TERM. Agencies must use this scale to report the condition of their facility assets. This scale has the following values:



**Table 1. FTA TERM Condition Assessment 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 be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

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 not be in good repair if it has a rating of 1 or 2. This scale as it applies to rating levels is reviewed further in Section 2.0 of this guidebook.

This guidebook provides direction on how to assign a condition rating and calculate performance measures. However, it does not include detailed information on inspections. Agencies may have procedures already in place or develop new procedures to complete inspections.

### **1.3 Facility Assessment Rating Levels**

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

- A. Substructure
- B. Shell
- C. Interiors
- D. Conveyance (Elevators and Escalators)
- E. Plumbing
- F. HVAC
- G. Fire Protection
- H. Electrical
- I. Site
- J. Equipment (for Administrative and Maintenance Facilities)
- K. Fare Collection (for Passenger and Parking Facilities)

Agencies must also assess equipment for administrative and maintenance facilities, and fare collection for passenger and parking facilities. Section 2.0 of this document describes how to assess the primary level and their secondary levels, and Section 3.0 describes how to aggregate the assessments into an overall facility rating.

## 1.4 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, passenger, and parking facility that is listed in the NTD AIM and for which the agency has direct capital responsibility.
- Transit agencies must update facility conditions every four 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 – Poor

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 primary levels (potentially starting with secondary levels) then aggregate the primary level data to obtain an overall facility condition rating. Example aggregation approaches are reviewed in Section 4.
- Facility primary rating level types 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

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 review by FTA.

## 2.0 Condition Assessment Procedures

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### 2.1 Define Primary and Secondary Facility Ratings

This section describes the procedures for conducting a facility condition assessment. The

classification is based upon American Society of Testing and Materials (ASTM) documents that provide standards for classification of buildings and related features, but these have been customized in certain respects to address common features of transit facilities.

Table 2 provides a list of rating levels for administrative and maintenance facilities, while Table 3 provides a list for passenger and parking facilities. The primary difference between these facility groups is the inclusion of specialized equipment – maintenance and operations – in administrative and maintenance facilities, and fare collection and passenger amenities in passenger and parking facilities.

**Table 2. Administrative and Maintenance Facilities: Rating Level**

ID#	Primary Level	Secondary Level
<b>A.</b>	<b>Substructure</b>	<ul style="list-style-type: none"> <li>• Foundations: Walls, columns, pilings, etc.</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>• Partitions: Walls, interior doors, fittings and signage</li> <li>• Stairs: Interior stairs and landings</li> <li>• Finishes: Materials used on walls, floors, and ceilings</li> </ul> <p>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> <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>

ID#	Primary Level	Secondary Level
H.	Electrical	<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>
I.	Equipment*	<ul style="list-style-type: none"> <li>Equipment related to the function of the facility, including maintenance or vehicle service equipment – does not include supplies</li> </ul>
J.	Site	<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>

\* Agencies may choose to include equipment assets as an administrative and maintenance facilities asset or inventory the equipment in their TAM Plan in the Equipment asset category. Equipment valued between \$10,000 and \$50,000 may be rated in a facility. If equipment is valued at \$50,000 or more, or is a piece of equipment you would inventory separately in your TAM Plan, it may not be rated in a facility.

**Table 3. Passenger and Parking Facilities: Rating Levels**

ID#	Primary Level	Secondary Level
A.	Substructure	<ul style="list-style-type: none"> <li>Foundations: Walls, columns, pilings, etc.</li> <li>Basement: Materials, insulation, slab, floor underpinnings</li> </ul>
B.	Shell	<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.	Interiors	<ul style="list-style-type: none"> <li>Passenger areas: Platform and access tunnels / passageways</li> <li>Partitions: Walls, interior doors, fittings and signage</li> <li>Stairs: Interior stairs and landings</li> <li>Finishes: Materials used on walls, floors, and ceilings</li> </ul>

ID#	Primary Level	Secondary Level
		Covers all interior spaces, regardless of use.
D.	Conveyance	<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.	Plumbing	<ul style="list-style-type: none"> <li>• Fixtures</li> <li>• Water distribution</li> <li>• Sanitary waste</li> <li>• Rain water drainage</li> </ul>
F.	HVAC (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.	Fire Protection	<ul style="list-style-type: none"> <li>• Sprinklers</li> <li>• Standpipes</li> <li>• Hydrants and other fire protection specialties</li> </ul>
H.	Electrical	<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>
I.	Fare Collection Equipment	<ul style="list-style-type: none"> <li>• Items including turnstiles, ticket machines, and any other major equipment requiring capital request for replacement</li> </ul>
J.	Site	<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 1: Classification of Facility Rating Levels**

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

- Staircases
- Sprinkler systems
- Maintenance elevator 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 elevators 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.

## **2.2 Condition Assessment Guidelines and Rating Descriptions**

This section provides descriptions of conditions corresponding to each TERM scale condition rating for each level. Use these descriptions as a guide to assign a score to the individual levels. Individual agencies may find it necessary to tailor the condition descriptions provided here; this may include customizations to address specialized assets or conditions, incorporating existing practices and data, and/or leveraging more detailed data the agency collects.

### **2.2.1 Condition Assessment Rating Scale**

Table 4 details the condition rating scale established in FTA's TERM. This table was also provided in Section 1.0. Subsequent tables detail how this general scale must be applied. Note the scale is categorical, and thus only integer values on the scale are defined. To rate primary or secondary levels which are partially in one condition and partially in another, it is recommended that an inspector record the secondary level condition ratings, and then aggregate the ratings later to determine the primary level rating. Aggregation approaches are explained further in Section 3.0. The following sections detail how to apply the overall rating definitions to the recommended set of rating levels.

**Table 4. FTA TERM Condition Assessment Scale**

Rating	Condition	Description
5	Excellent	No visible defects, new or near new condition, may still be under


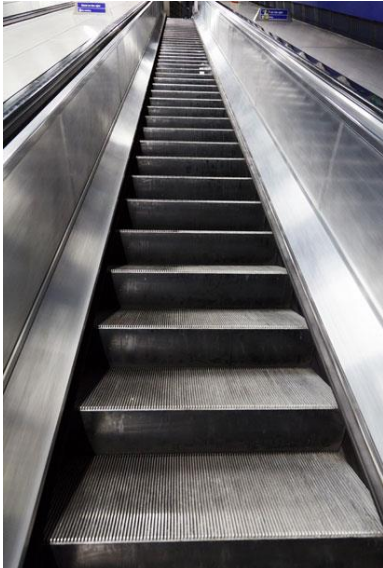
		warranty if applicable
4	Good	Good condition, but no longer new, may be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective ; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life

Condition rating descriptions are provided in detail in Appendix B: Condition Rating Descriptions . An example of the application of the rating scale is provided in Table 5 below. Note that the photos in the below example do not necessarily correspond to the TERM rating they appear beside.

**Table 5. Example Condition Rating Descriptions**

*Note: Tables for each rating level are included in Appendix B: Condition Rating Descriptions .*

D. Conveyance	TERM Rating	Description
<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; signs of corrosion and damage. They are cosmetically “fair”, but functioning as intended under maintenance schedule.

D. Conveyance	TERM Rating	Description
 	2: Marginal	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	Critical defects are 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.

### **Example 2: Condition Assessment Rating Scale**

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

**Answer:** Those still in new condition would be rated “5: Excellent.” Those with no more than superficial defects would be rated as “4: Good.”

## **2.3 Condition Assessment Procedures**

This section describes how to assess the condition of a facility based on inspections



recommended in Section 2.1 using the condition assessment language described in Section 2.2.

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. Primary level ratings with a portion or all of their secondary levels 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, as determined by the agency, to evaluate the field observed conditions and make a determination of the impacts of the conditions on the performance of the asset. Such reviews may include examination of the field inspection results, as well as any notes or photos from the inspection, review of as-built plans, and/or supplemental analysis as deemed appropriate to evaluate the performance. 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 AIM and review these during the inspection process where applicable.
- **Warranty status** and any additional information on the age of the facility and building materials; this may be helpful in understanding useful life and obsolescence.
- **Any other known issues**, such as whether the asset has been built to current standards. Inspectors are required to have on hand the results of previous inspections and records of past defects found and/or corrected.

#### ***Example 3: Condition Assessment Procedures***

**Question:** What actions must occur if an inspector rates a primary or secondary level condition as “1: Poor”?

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

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.

### **2.3.1 Secondary level Condition Assessments**

During the on-site assessment, the inspector will observe the primary and secondary level conditions identified in Section 2.1. These are expected to be readily visible and accessible, with information on less easily accessible features like internal systems and wiring gained via documentation and interview. This means that entering limited access areas such as crawl spaces, utility pits, and sloped roofs is not necessary and that their condition can be observed from a point of access.

The inspector will assess each using the FTA TERM condition rating scale. For example, using Table 6 below, when inspecting plumbing, condition ratings should be recorded for water distribution pipes and fixtures; sanitary waste; and rainwater drainage. It is up to the agency to determine how to combine these into a single rating for the ID # E. Plumbing. Generally speaking, area or percentages of area (i.e., building area in square footage) or number of units, can be used to measure secondary level quantities. This approach may be helpful for facilities that were built in phases causing different portions of the ID # A. Substructure or others to have different conditions. For ID # J. Site, agencies should omit the portion of the site occupied by buildings when calculating the percentage of site area in each condition rating.

Agencies may choose how to weight their secondary levels, when aggregating to the primary level rating. It is expected that agencies will develop and document a methodology for aggregating ratings for a given facility.

#### **Example 4: Rating Primary Level**

**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 be rated? Note that replacement costs can be used to aggregate ratings to determine an overall facility rating. Section 4 describes how these values are aggregated to describe overall conditions.

**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 is \$4 million. Of this total 87.5% (\$3.5 million) is rated as 4: Good and 12.5% is rated as 1: Poor.

Table 6 below details the assessment tasks for each of the rating levels.

**Table 6. Assessment Tasks**

ID	Primary level	Secondary level
A.	Substructure	<ul style="list-style-type: none"> <li>Foundations: Inspect walls, columns, pilings, other structural elements for signs of decay.</li> <li>Basement: Inspect non-foundation and structural elements</li> </ul>

ID	Primary level	Secondary level
		such as facing materials, insulation, slab, floor underpinnings, crawl spaces, etc.
<b>B.</b>	<b>Shell</b>	<ul style="list-style-type: none"> <li>• Inspect superstructure / structural frame, including columns, pillars, and walls.</li> <li>• Inspect façade, curtain wall system, glazing system, exterior sealants, exterior balconies, doors, stairways, parapets, fire escapes, gutters, downspouts.</li> <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> </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, and 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> </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> </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, and any leaks.</li> </ul>
<b>F.</b>	<b>HVAC (Heating, ventilation, and air conditioning)</b>	<ul style="list-style-type: none"> <li>• Inspect systems and their elements 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 element 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</li> </ul>

ID	Primary level	Secondary level
		their suitability or need for improvement / upgrade.
<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 elements relating to overall protection system and compliance.</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 elements 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> </ul>
<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 elements.</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.</li> </ul>

ID	Primary level	Secondary level
		<p>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.</p> <ul style="list-style-type: none"> <li>Inspect passenger huts and benches for corrosion, paint condition, glass condition and damage.</li> </ul>

## 2.4 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.”

**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.

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 *Quality Management System 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 a 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.
- **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.

### 3.0 Condition Rating Aggregation Approaches

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Once the conditions of individual facility levels are assessed and aggregated, the next step required to support NTD reporting is to calculate an overall condition rating for the facility and

then the overall performance measure for each of the two facility groups – administrative and maintenance, and passenger and parking facilities. 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 primary and secondary 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 rating. However, an agency may use any of the approaches described below.

### 3.1 Alternative 1: Weighted Average Condition

This approach requires utilizing known replacement costs. Given these replacement costs, the average rating is calculated for each primary level as described below, and an overall rating is calculated by weighting each primary and secondary level rating by the replacement cost. The specific steps in the calculation are:

#### Step 1:

Calculate the average rating of the facility using the primary level TERM scores and their respective replacement costs. To calculate the condition rating, take the sum of each primary level TERM score multiplied by its respective replacement cost, and divide the total by the sum of all replacement costs (weights). The aggregated facility condition rating is calculated as follows:

$$FR = \frac{\sum_i CR_i CW_i}{\sum_i CW_i}$$

where  $FR$  is the overall facility rating,  $CR_i$  is the TERM score for rating level  $i$ , and  $CW_i$  is the weighting, or replacement cost, for rating level  $i$ .

#### Weighting

Replacement costs should be the only method of weighting for the weighted average condition approach as it is expected that agencies will have an understanding of their assets at the primary level.

#### Step 2:

Round off the overall rating value for the facility to the nearest integer value and report the integer condition rating to NTD. 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 5: Calculating Facility Condition Using Alternative 1

The following is an example calculation to determine the overall facility condition rating using Alternative 1: Weighted Average Condition.

	Replacement Cost	Rating
Substructure	\$10,000	1.87
Shell	\$5,000	2.11
Interiors	\$5,000	3.10
Conveyance	\$2,500	2.38
Plumbing	\$10,000	2.08
HVAC	\$7,000	2.83
Fire Protection	\$3,000	2.91
Electrical	\$8,000	2.48
Equipment	\$6,000	3.00
Site	\$5,000	4.01
<b>Total</b>	<b>\$61,500</b>	

$FR = (\$10K * 1.87) + (\$5K * 2.11) + (\$5K * 3.10) + (\$2.5K * 2.38) + (\$10K * 2.08) + (\$7K * 2.83) + (\$3K * 2.91) + (\$8K * 2.48) + (\$6K * 3.00) + (\$5K * 4.01) = 157,930$

$FR = 157,930 / \$61,500 = 2.568$

Based on this method, the average rating is 2.568. This rounds to an overall facility rating of 3.

**FR = 3**

## 3.2 Alternative 2: Median Value

If an agency has limited data on replacement costs, an alternative approach for calculating the overall condition rating of a facility is to use the median value of all primary or secondary rating levels. The median value is the middle value in a series of sorted numbers. The specific steps in the calculation are as follows:

Determine the condition rating of each level, and then sort the TERM scores in ascending order. When there is an odd number of a value, the median is the value that falls in the middle of the list. When there is an even number of values, choose the lower of the two middle values since that is the condition rating that at least 50% are at or below.

For instance, if 50% of the secondary level have a TERM rating of 2, 30% have a TERM rating of 3, and 20% have a TERM rating of 4, then the aggregated rating would be 2, as over half of the secondary level have a rating of 2 or less. Note that the median in this case is not an



average, or mean value, meaning that you do not take the individual value of each number into account.

#### ***Example 6: Calculating Overall Facility Condition Using Alternative 2***

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

	Rating
Substructure	1
Shell	1
Interiors	2
Conveyance	2
Plumbing	2
HVAC	3
Fire Protection	3
Electrical	3
Fare Collection	3
Site	4

***Overall Facility Rating = 2***

### **3.3 Alternative 3: Alternative Weighting**

An agency may use an alternative approach provided the approach is consistent, repeatable, and that it yields a single value for each facility using the five-point TERM condition scale. For example, an agency may prefer to calculate a weighted average condition, such as that illustrated in Alternative 1, but lacks sufficient data on replacement costs. Instead, an agency may choose to compute a weighted average condition, weighting each level by a factor that serves as a proxy for asset value or develop a measure of criticality, which could be used as a weighting factor. Equal weighting is another option for agencies. As the name implies, if using the equal weighting option, each secondary level would be weighed equally. The equal weighting approach is not recommended for primary level. If an agency does choose to use such an alternative approach, the calculation approach and rationale for its use must be documented. These techniques may also be used to calculate the primary level rating after inspecting each secondary level of the asset. While not reported to NTD, ratings must be retained in the event an agency changes its aggregation approach and needs to recalculate previously-reported conditions.

## **4.0 Calculate Performance Measures**

After determining the overall facility ratings for each of its administrative and maintenance, and passenger and parking facilities, an agency must calculate the performance measure for each

of the overarching facility groups:

- 1) Administration and maintenance facilities
- 2) Passenger and parking facilities

To determine the performance measure for a facility category (i.e., administrative and maintenance; passenger and parking), count the number of facilities in that category with a rating below 3 and divide the value by the total number of facilities in the facility category (e.g., passenger and parking). Note that the performance measure is the minimum each agency is required to report, grantees are invited to expand upon its requirement as part of their TAM plan.

#### ***Example 7: Calculating Facility Performance Measures***

The following is an example calculation for the performance measure for the passenger and parking facility category. As there are 4 facilities with a condition rating under 3 on the TERM scale, the performance measure for this facility category is 40%.

Facility	Rating
Passenger 1	4
Passenger 2	4
Passenger 3	4
Passenger 4	2
Passenger 5	2
Parking 1	1
Parking 2	3
Parking 3	3
Parking 4	4
Parking 5	2
<b>Performance Measure</b>	<b><math>4/10 * 100 = 40\%</math></b>

## **5.0 Reporting and Data Requirements**

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### **5.1 Reporting Procedures**

The NTD Policy Manual lists requirements regarding collecting and reporting financial data, inventory, service data, and safety data for transit agencies that receive 49 U.S.C. §§ 5307 and 5311 funds. Transit agencies that receive funds from FTA, and own, operate, or manage capital assets for which they have direct capital responsibility are now required to submit facility asset condition data and performance measure metrics and targets annually within four months after the end of the agency's fiscal year.

As part of this annual report, an agency must submit overall facility condition ratings for each facility in its asset inventory for which it has direct capital responsibility. However, this does not imply that condition data must be collected annually. FTA requires that facility condition data be fully updated every four years, at a minimum. Agencies may choose to do a quarter of their facilities every year or more frequently. Each annual report must include updated facility condition data incorporating any assessments completed since the last report. Agencies that share direct capital responsibility for facility assets should determine how to coordinate condition assessment reporting. Only facilities that are actively used to support revenue service are required to have their condition assessed. As such, facilities under construction are exempt from condition assessment requirements.

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 review by FTA.

# Appendices

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## Appendix A: 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

### **HVAC**

Heating, ventilating and air conditioning.

### **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.

### **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.

### **State of Good Repair Formula 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. § 5337.

### **Structural Frame**

The building system that supports the building's weight.

### **Transit Asset Management Plan**

A plan that includes an inventory of capital assets, a condition assessment of inventoried assets, a decision support tool, and a prioritization of investments.

### **Useful Life**

The average amount of time in years that an item, or system is estimated to function, when installed new and assuming routine maintenance is practiced.

## Appendix B: Condition Rating Descriptions





Note that the photos in the below examples do not necessarily correspond to the TERM rating they are placed next to. Instead, these photos are simply here to show agencies an image of the described.


**Table 7. FTA TERM 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 be slightly defective or deteriorated, but is overall functional
3	Adequate	Moderately deteriorated or defective; but has not exceeded useful life
2	Marginal	Defective or deteriorated in need of replacement; exceeded useful life
1	Poor	Critically damaged or in need of immediate repair; well past useful life




## Administrative/ Maintenance Facilities

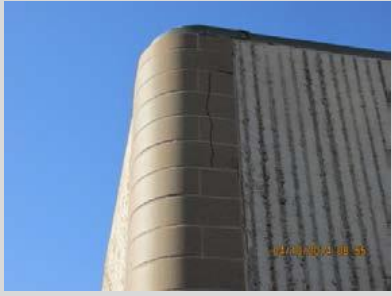

**Table 8. Substructure**

Substructure	Rating	Description
	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 elements. Insulation or drainage may need maintenance. Substructure is cosmetically “fair”, and functioning as designed; within useful life.
	2: Marginal	Elements 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. Elements are functional but have exceeded their useful lives.

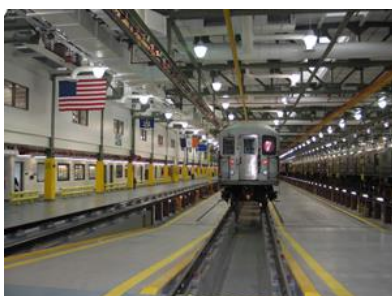
Substructure	Rating	Description
	1: Poor	Elements show critical defects affecting function, health, or safety. They are visibly in poor condition. They cannot be repaired; must be replaced. They have exceeded their useful life and warrant structural review.

**Table 9. Shell**

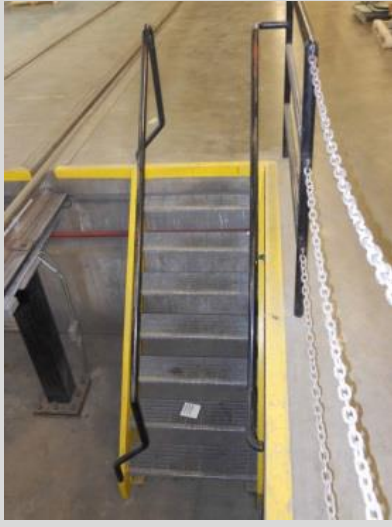


Shell	Rating	Description
	5: Excellent	New construction, no visible defects or damage
	4: Good	Minor improvement needed; sub-elements are more than five years old but are functioning without issue under routine maintenance. Only minor superficial damage or defect. No sagging, corrosion, cracking, shifting, or leaks.
	3: Adequate	Repairs are needed. Element or sub-elements show signs of minor cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically "fair", but functioning as designed.

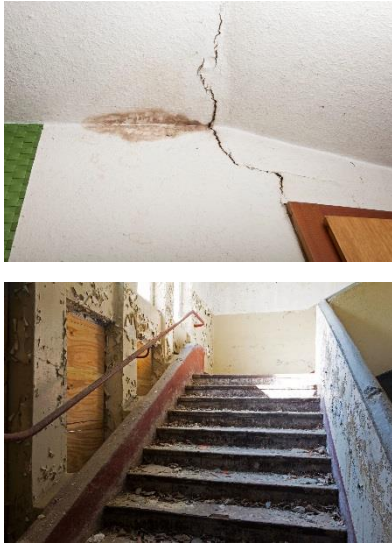
Shell	Rating	Description
	2: Marginal	Element or sub-elements show signs of significant cracking, sagging, swelling, corrosion, leaks, or shifting. Significant repairs are needed, but there currently does not appear to be a safety issue on any single sub-element.
	1: Poor	Element or sub-elements have 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.

**Table 10. Interiors**

Interiors	Rating	Description
	5: Excellent	New construction, no visible defects or damage.



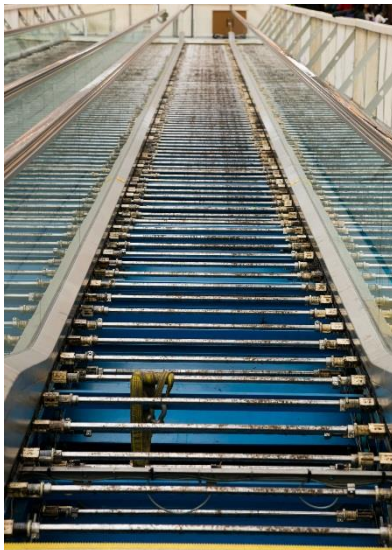


Interiors	Rating	Description
	4: Good	<p>Minor improvement needed; only shows superficial damage or defect. Minimal signs of wear, no major problems, minimal signs of deterioration. Primarily cosmetic issues with no functional impact, which can be addressed through routine maintenance.</p>
	3: Adequate	<p>Repairs are needed. Element or sub-elements show signs of cracking, drainage issues, sagging, corrosion, or shifting. They are cosmetically "fair", but functioning as designed.</p>
	2: Marginal	<p>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.</p>





Interiors	Rating	Description
	1: Poor	Element or sub-elements 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.


**Table 11. Conveyance**

Conveyance	Rating	Description
	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.




Conveyance	Rating	Description
	3: Adequate	Repairs are needed; elements show signs of corrosion and damage. They are cosmetically “fair”, but functioning as intended under maintenance schedule.
	2: Marginal	Element or sub-elements 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	Element or sub-elements 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.

**Table 12. Plumbing**



Plumbing	Rating	Description
	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 elements need extensive repair at a minimum. Currently does not appear to be any safety issue.

Plumbing	Rating	Description
	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.



**Table 13. HVAC**




HVAC	Rating	Description
	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.



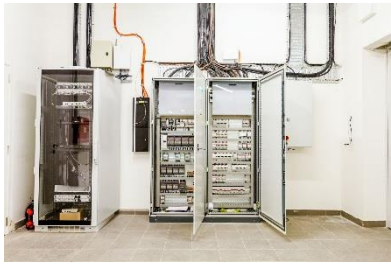


HVAC	Rating	Description
	2: Marginal	System has exceeded its useful life; fails to meet standards or needs. Elements need extensive repair at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function; its issues are beyond repair and warrant detailed review.

**Table 14. Fire Protection**



Fire Protection	Rating	Description
	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.

Fire Protection	Rating	Description
	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.

**Table 15. Electrical**


Electrical	Rating	Description
	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.




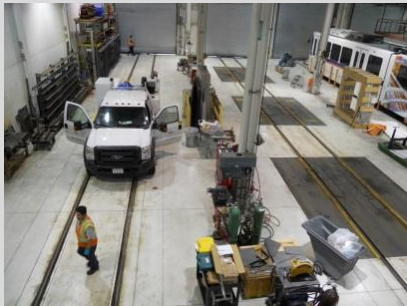
Electrical	Rating	Description
	2: Marginal	System has exceeded its useful life; defects are critical and/or widespread; no longer meets needs or current standards and requires partial replacement at a minimum. Currently does not appear to be any safety issue.
	1: Poor	System is well past its useful life and has critical defects affecting function and ability to meet standards. Issues are beyond repair and warrant detailed review.




**Table 16. Site**

Site	Rating	Description
	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-elements 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.




Site	Rating	Description
	1: Poor	Site has critical defects affecting function, health, or safety. Issues are beyond repair and warrant detailed review.

**Table 17. Equipment (Only for Administrative and Maintenance Facilities)**

Equipment	Rating	Description
	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.

Equipment	Rating	Description
	3: Adequate	Repairs are needed; some deterioration exists, and maintenance needs are considerable. However, equipment meets needs and is still within its useful life.
 <p>Source: Iowa Department of Transportation</p>	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.
 <p>Source: Iowa Department of Transportation</p>	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.

**Table 18. Fare Collection (Only For Passenger and Parking Facilities)**

Fare Collection	Rating	Description
	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.
N/A	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.



Fare Collection	Rating	Description
N/A	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.

## Image Sources

1. 123RF Stock Photos, available at: <http://www.123rf.com/>
2. Denver Regional Transportation District, *State of Good Repair: FM Building Inspection Standards*, last revised June 2014.
3. Flickr, *Enter BART with Clipper*, photo credit to Adam P. Fagen, available at: <https://www.flickr.com/photos/afagen/7663770600/>. Photo taken March 14, 2012.
4. FTA, *TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation*, 2016.
5. Staff photo, photo credit to Frances Fisher. Photo taken December 1, 2016.

**Table 19. Image Sources Matrix**

	Rating				
Primary Level Asset	5: Excellent	4: Good	3: Adequate	2: Marginal	1: Poor
Substructure	1	4	1	2	1
Shell	4	2	2	2	1
Interiors	4	2	2	1	1
Conveyance	1	2	2	5	1
Plumbing	1	4	1	1	1
HVAC	2	2	2	2	2
Fire Protection	1	1	4	1	4
Electrical	1	2	1	2	2
Site	1	2	2	2	2
Equipment	2	2	4	N/A	N/A
Fare Collection	1	4	3	N/A	N/A

## Appendix C: Sample Administrative/Maintenance Facility Condition Assessment Form

<b>Inspection Date:</b>
<b>Inspector Name:</b>
<b>Facility Name:</b>
<b>Address/Location:</b>

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

## Appendix D: Sample Passenger/Parking Facility Condition Assessment Form

<b>Inspection Date:</b>
<b>Inspector Name:</b>
<b>Facility Name:</b>
<b>Address/Location:</b>

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



## Appendix E: References

ASTM International. 2008. *Standard Guide for Property Condition Assessment: Baseline Property Condition Assessment Process*, Standard E2018-08.

ASTM International. 2009. *Standard Classification for Building Elements and Related Sitework—UNIFORMAT II*, Standard E1557-09.

FTA Office of Budget and Policy. 2016. *Asset Inventory Module FY 2017 Reporting Manual*.

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FTA Office of Budget and Policy. 2016. *National Transit Database Policy Manual*.

FTA. *Quality Management System Guidelines*. Report FTA-PA-27-51914-12.1.

U.S. Government Publishing Office. 2016. *Transit Asset Management*. 49 CFR part 625.

U.S. Government Publishing Office. 2016. *National Transit Database*. 49 CFR part 630.