TAM INFRASTRUCTURE PERFORMANCE MEASURE REPORTING GUIDEBOOK:

Performance Restriction (Slow Zone) Calculation

Federal Transit Administration
U.S. Department of Transportation
April 2017

U.S. Department of Transportation
Federal Transit Administration

Table of Contents

1.0 Introduction

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 the infrastructure performance measure.

New and updated regulations require transit agencies to report more detailed infrastructure asset information to the NTD Asset Inventory Module (AIM). In addition, agencies with capital responsibility for rail fixed guideway are required to submit performance restriction (slow zone) calculations as well as targets annually.

The TAM final rule (49 CFR part 625 Subpart D - Performance Management) requirements establish the performance measures to be reported to the NTD Asset Inventory Module (AIM). This guidebook outlines the calculation of the performance restriction reporting to the NTD.

In addition to AIM reporting, the TAM final rule requires reporting on infrastructure at a level of detail sufficient to monitor and predict the performance of assets and to inform investment prioritization in the TAM Plan. This guidebook covers the procedures for compliance with the infrastructure performance measure calculation. The infrastructure performance measure metric is based on the calculations described in this document.

Information on infrastructure performance is intended to supplement other infrastructure-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 rail fixed guideway transit 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 track fixed rail performance restrictions and those who will compile the agency’s infrastructure asset inventory.

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

1.3 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 guideway performance restriction data.
- **Section 3** details procedures for calculating guideway under performance restrictions.
- **Appendices** present a glossary of terms and example forms.

1.4 Legislative Background

The guidance presented here is intended to help agencies fulfill the new infrastructure performance measure data requirements of 49 U.S.C. § 5326 and the reporting requirements of 49 U.S.C. § 5335 as enacted under MAP 21. FTA effected the new statutory requirements 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). The new requirements include increased detail on infrastructure asset reporting and reporting on performance restrictions for transit agencies with capital responsibility for rail fixed guideway, in addition to gathering uniformly categorized financial, and operating 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 or benefiting from 49 U.S.C. § 5307 or 5311 formula funds must report data consistent with the uniform requirements for inclusion in the database including asset inventory and performance requirements consistent with the TAM rule.

Given that the NTD did not previously include data on guideway 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 State of Good Repair (SGR)-related measures. This guidebook offers a methodology for defining, gathering, and reporting this new data with respect to fixed guideway.

2.0 Reporting and Data Requirements

2.1 Reporting Procedures

The NTD Policy Manual lists requirements regarding collecting and reporting financial data, service data, and safety data, for transit agencies that receive Section 5307 and 5311 funds. Transit agencies that receive funds from, and own, operate, or manage capital assets for which they have direct capital responsibility are now required to submit more detailed asset inventory data and performance measure metrics and targets in an annual report within four months after the end of the agency's fiscal year.

The NTD Policy Manual details how to determine what guideway to report, and how to measure the extent of guideway. The primary measure of guideway extent is track miles, the measurement of which is detailed further below. This measure is reported into the FTA's Transit Way Mileage form.

Performance restrictions are reported by mode and type of service as an average length of track route mileage operating under performance restriction. To determine this measure agencies are required to calculate the track miles (measured to the nearest hundredth of a mile) under performance restrictions as a result of all causes at the same time each month: 9:00 AM local time on the first Wednesday of each month. If your agency does not operate service at 9 AM, you should measure your performance restrictions at the peak of the AM peak on the first Wednesday of the month. The values calculated each month must be averaged, and the average annual value is required to be reported in the Annual Report.

2.2 Data Requirements

This section defines what data must be collected in order to report length of guideway performance restrictions. Agencies must first establish their track miles for rail Fixed Guideway (FG) modes. Then the agency must calculate the track miles subject to performance restrictions.

2.2.1 Data Definitions

Fixed Guideway (FG)
A public transportation facility using and occupying:

- A separate right-of-way (ROW) or rail for the exclusive use of public transportation; or
- A fixed catenary system useable by other forms of transportation.

By the above definition, all rail modes operate exclusively on FG. Although the FTA recognizes several non-rail modes as operating on fixed guideway, the TAM performance measurement currently only applies to reporters with rail fixed guideway.

Full Service Speed
The planned speed at time of installation at which vehicles can travel on a segment during normal operation, or the speed at which vehicles can travel on the segment absent any speed restriction on the segment.

Infrastructure Performance Measure

The infrastructure performance measure is the monthly average percentage of track segments under performance restriction, reported annually. Performance restrictions caused by issues with the rail fixed guideway, track, signals and systems should be considered in calculating the performance measure.

Performance Restriction

A performance restriction is defined to exist on a segment of rail fixed guideway when the maximum permissible speed of transit vehicles is set to a value that is below the guideway's full service speed. The performance restriction can be communicated through operating instructions, route signage, flaggers, or an agency's dispatch system. Performance restrictions may result from a variety of causes, including defects, signaling issues, construction zones, maintenance work, or other causes.

Note the following regarding the definition of performance restrictions:

- *Generally the full service speed for a section will be the same as the maximum allowable speed established for the section at the time of system opening.*
- *For rail modes the maximum speed for the guideway's track class can often be used to establish the full service speed of the track. However, track class speed may be lower than the full service speed if the track class has been lowered since the track went into operation. Maximum speed of the track class may be higher than the full service speed in the vicinity of curves or stations where safe operations require lowering vehicle speed.*
- *In cases where it is not practical to determine the full service speed of the guideway and no maximum operating speed (absent temporary speed restrictions) has been established, the maximum speed scheduled historically may be used as a proxy for the full service speed.*

Segment

The TAM final rule defines the infrastructure performance measure as the percentage of segments under performance restriction. It is suggested that agencies consider one segment to be defined to one one-hundredth of a mile (0.01 mi). By doing so, calculating the infrastructure performance measure in mileage yields the same result as calculating the measure in segments.

Track Miles (Miles of Track)

Miles of track is measured as the number of tracks per one-mile segment of right-of-way (ROW). Miles of track are measured without regard to whether or not rail traffic can flow in only one direction on the track.

Note the following regarding the definition for track miles (miles of track):

- *Although the NTD glossary definition of miles of track includes yard track and sidings, the performance measure does not.*
- *Do not include yard track or sidings in the calculation of track miles for purpose of the performance measure.*

2.2.2 Data Items

The basic data item required for characterizing the extent of performance restrictions is the length of track miles with performance restrictions. This measure is required for each combination of mode and type of service with rail fixed guideway. Calculating the annual measure requires tabulating the measure on a monthly basis, then reporting the annual average. Although not required for NTD reporting, agencies may also choose to track length of track miles with performance restrictions by cause.

2.3 Summary

The following summarizes the guideway performance restriction requirements described above.

Guideway Performance Restriction Requirements

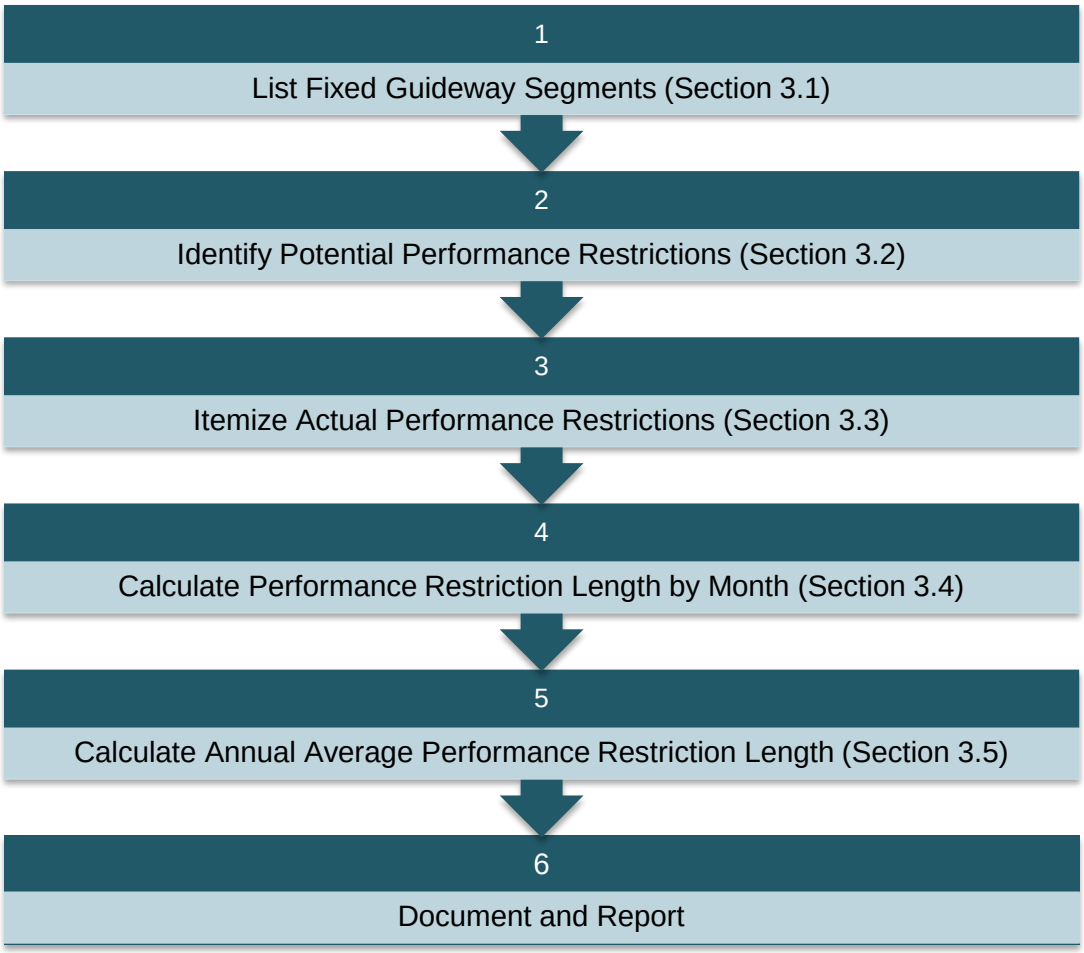
- A performance restriction is defined to exist on a segment of rail fixed guideway when the maximum permissible speed of transit vehicles is set to a value that is below the guideway's full service speed.
- Agencies must measure the **length of track miles under performance restrictions** each month based on a snapshot of conditions that existed as of 9:00 AM local time on the first Wednesday of the month. This calculation must be performed separately for each combination of rail fixed guideway mode and type of service.
- All performance restrictions that can be applied to a specific section of track (excludes system-wide restrictions for inclement weather, for example) are required to be included in the calculation, regardless of cause or duration, including temporary speed restrictions placed due to maintenance activity.
- Agencies are required to report an annual value for length of track miles under performance restrictions to FTA by averaging the values calculated each month over the course of the year.
- For further details on the definition of modes, types of service, and calculation of track miles refer to the NTD Policy Manual.

3.0 Performance Restriction Calculation Procedure

This section describes the calculation procedure for the infrastructure performance measure, which is the percentage of segments under performance restriction.

Figure 1 below illustrates the basic steps in calculating the performance measure. The steps illustrated in the figure must be performed for each combination of mode and type of service with rail fixed guideway operated by an agency. The following sections detail each step described in Figure 1.

Figure 1 - Infrastructure Performance Measure Calculation Steps



3.1 List Fixed Guideway Segments

The first step is to prepare a list of guideway segments for each combination of mode and type of service with rail fixed guideway operated by the agency. An example form for use in this step is included in Appendix B.

An agency typically will have a guideway inventory prepared to support other required NTD reporting (e.g., calculation of track miles). The additional detail required to support calculating performance restrictions is to determine the full service speed of each segment.

As noted in Section 2, generally the full service speed is the same as the maximum allowable speed established for a guideway section at the time of system opening. The maximum permissible speed for the guideway's track class can generally be used as the full service speed. However, if the track class has been lowered since the track went into operation then the track class at the time the track went into operation must be used instead. Also, near curves or stations the full service speed of the track may be lower than the maximum speed for the track class. It should be noted that rail systems not subject to regulation by the Federal Railroad Administration (FRA) generally do not have defined track classes.

Given that the purpose of preparing the list of guideway segments is to help identify where performance restrictions occur, an agency may wish to start by identifying segments at a summary level, using the full service speed over a long section of guideway, and then later subdivide the segments further if a potential speed restriction is identified in the next step. Figure 2 shows a diagram of the example segments described in Table 1.

Figure 2 - Diagram of Example Guideway Segments (not to scale)

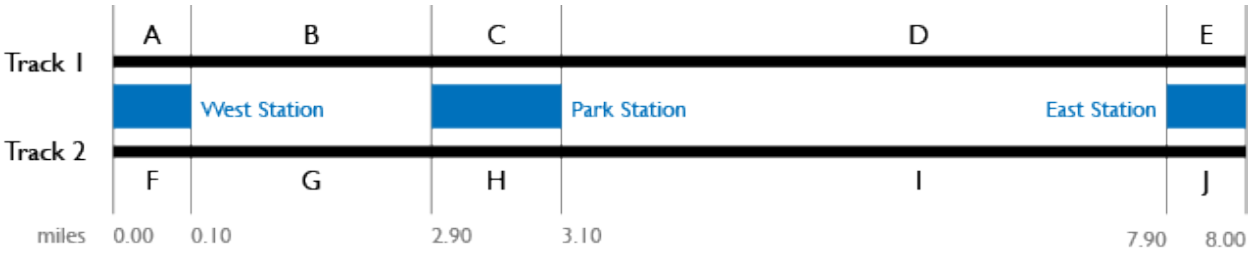


Table 1 - Example List of Guideway Segments

Segment ID	Description	From	To	Track Miles	Full Service Speed (MPH)
A	West Station, Track 1	0.00	0.10	0.10	10
B	West-Park, Track 1	0.10	2.90	2.80	40
C	Park Station, Track 1	2.90	3.10	0.20	10
D	Park-East, Track 1	3.10	7.90	4.80	40
E	East Station, Track 1	7.90	8.00	0.10	10
F	West Station, Track 2	0.00	0.10	0.10	10
G	West-Park, Track 2	0.10	2.90	2.80	40
H	Park Station, Track 2	2.90	3.10	0.20	10
I	Park-East, Track 2	3.10	7.90	4.80	40
J	East Station, Track 2	7.90	8.00	0.10	10

3.2 Identify Potential Performance Restrictions

The next step is to identify potential performance restrictions. This step must be performed on a monthly basis for each combination of mode and type of service with fixed guideway, using a snapshot of conditions in effect as of 9:00 AM local time on the first Wednesday of the month as the basis for the calculation. If your agency does not operate service at 9 AM, you should measure your performance restrictions at the peak of the AM peak on the first Wednesday of the month.

As discussed in Section 2, a performance restriction may result from a variety of causes, including defects, signaling issues, construction zones, maintenance work, or other causes. All performance restrictions that can be localized to a specific guideway section are required to be included in the reporting, including temporary restrictions placed during maintenance activities,

restrictions on speeds for vehicles immediately following completion of maintenance, and restrictions due to events.

Performance restrictions are typically identified through operating instructions provided daily to vehicle operators. However, they may also be entered directly into a dispatching system and enforced through signage or flaggers. Also, some performance restrictions may take the form of blanket restrictions, such as when then speed of a track is systematically lowered to reflect deteriorated weather conditions. Particularly when restrictions are imposed through such blanket conditions it may require additional analysis to determine whether a performance restriction effectively exists on a given segment of guideway.

In this step the agency would make an initial list of potential performance restrictions, then confirm which actually restrict performance over what segments of guideway in the next step. Note performance restrictions are not reported by cause, but tracking causes is recommended for supporting review of the calculations, as well as for other purposes besides NTD reporting. Table 2 below shows an example of potential performance restrictions by cause. Note that this and subsequent tables show supplemental data that is not specifically required for NTD reporting, but that may facilitate calculation and tracking of performance restriction length.

Table 2 - Example List of Possible Performance Restrictions by Cause

Tracks	From	To	Max Speed Under Performance Restriction (MPH)	Performance Restriction
1, 2	0.00	0.35	10 mph	Temporary speed restriction due to rail defects
1	2.75	2.90	20 mph	ROW maintenance
2	4.00	5.08	20 mph	Temporary speed restriction due to improper elevation
1, 2	7.67	8.00	10 mph	East Station Improvement Project

3.2.1. Identifying When Performance Restrictions Occur

Often, performance restrictions are straightforward to identify. Rail operators are given daily bulletins identifying these, including cases where speeds are restricted due to track conditions, signaling issues, maintenance work, or other issues. Also, for commuter rail systems under FRA jurisdiction agencies must document changes to the class, and thus the maximum allowable speed, to a track segment. Further, for rail systems operating under automatic train control, any speed changes are explicitly entered into a dispatching system.

However, there are some types of restrictions that are more difficult to identify. These include:

- Systematic reductions in allowable speed relative to the original full service speed of the track due to deteriorated track conditions.
- Restrictions established through blanket operating instructions. These must be included in the calculations if they can be localized to specific track segments.

In cases such as those listed above, positively establishing whether a performance restriction exists may require review of historic data, such as scheduled speeds initially established for a system or information on how track was classified in the past. Agencies are encouraged to carefully document their assumptions regarding full service speed and approaches for handling cases where it may be hard to determine whether a restriction is in effect based on the definition provided in this document.

Examples: Identifying When Performance Restrictions Occur

Question: An agency's rail schedule implies that trains will run at an operating speed less than the full service speed of the track. Does this imply a performance restriction is in effect?

Answer: No. In this case vehicles are not specifically restricted from traveling at full service speed – they simply are not required to do so to meet the schedule.

Question: An agency has issued operating instructions with a system-wide maximum train speed applicable when tracks may be wet during fall months. Does this imply a performance restriction is in effect?

Answer: No. The instructions imply a performance restriction, but the instructions are system-wide and cannot be localized to a specific track segment. Thus, this does not impact the length of track miles under performance restrictions reported to the NTD.

3.3 Itemize Actual Performance Restrictions

In this step the agency would review each potential performance restriction identified in the previous step to determine which instances are actual restrictions, and if so over what track segments they apply. For each potential restriction it is necessary to compare the restricted speed to the speed listed for the corresponding segment of guideway based on the initial step of the process, at a minimum further subdividing a segment where required to delineate the start and end of the restriction. If a restriction cannot be localized to a specific track segment then it may be removed from consideration at this stage. For example, instructions to reduce speeds during wet weather or, alternatively, during extremely hot or cold weather would not generally be included in the calculations unless they could be localized to specific track segments.

The form included in Appendix B can be used to assist in this step.

Table 3 shows an example of this form completed based on the data in Table 1 and Table 2.

Note that in some cases a potential restriction may be removed from the list in this step, or the length over which it applies may be shortened. This may result from:

- Overlapping performance restrictions; and/or
- A performance restriction specified over a long segment that does not actually reduce speeds below full service speeds over a portion of the segment (e.g., on curves or near stations).

Agencies can attain a more accurate measure by splitting segments. In the example provided in Table 3, Segment B was split into three segments. Segment B-1 is affected by the rail defect restriction, and Segment B-2 is unaffected by any restriction. Segment B-2 will be removed before the next because there is no performance restriction on the segment. Segment B-3 is affected by right-of-way maintenance and will be carried forward to the next step.

Table 3 – Example Form Showing Sample Monthly Performance Restriction Calculation

Segment ID	Description	From	To	Track Miles	Full Service Speed (MPH)	Speed Restriction (MPH)	Performance Restriction (Y/N)	Performance Restriction
A	West Station, Track 1	0.00	0.10	0.10	10	10	N	Temporary speed restriction due to rail defects
B-1	West-Park 1, Track 1	0.10	0.35	0.25	40	10	Y	Temporary speed restriction due to rail defects
B-2	West-Park 2, Track 1	0.35	2.75	2.40	40	--	N	
B-3	West-Park 3, Track 1	2.75	2.90	0.15	40	20	Y	ROW maintenance
C	Park Station, Track 1	2.90	3.10	0.20	10	--	N	
D-1	Park-East 1, Track 1	3.10	7.67	4.57	40	--	N	
D-2	Park-East 2, Track 1	7.67	7.90	0.23	40	10	Y	East Station Improvement Project
E	East Station, Track 1	7.90	8.00	0.10	10	10	N	East Station Improvement Project
F	West Station, Track 2	0.00	0.10	0.10	10	--	N	
G-1	West-Park 1, Track 2	0.10	0.35	0.25	40	10	Y	Temporary speed restriction due to rail defects
G-2	West-Park 2, Track 2	0.35	2.90	3.55	40	--	N	
H	Park Station, Track 2	2.90	3.10	0.20	10	--	N	
I-1	Park-East 1, Track 2	3.10	4.00	0.90	40	--	N	
I-2	Park-East 2, Track 2	4.00	5.08	1.08	40	20	Y	Temporary speed restriction due to improper elevation
I-3	Park-East 2, Track 2	5.08	7.67	2.59	40	--	N	
I-4	Park-East 4, Track 2	7.67	7.90	0.23	40	10	Y	East Station Improvement Project
J	East Station, Track 2	7.90	8.00	0.10	10	10	N	East Station Improvement Project

3.4 Calculate Performance Restriction Length by Month

The next step in the calculation process is to sum the length of track miles under performance restrictions, simply adding the track miles for each restriction identified in the prior step.

Table 4 – Example Form Showing Sum of Length of Performance Restrictions

Segment ID	Description	From	To	Track Miles	Performance Restriction
B-1	West-Park 1, Track 1	0.10	0.35	0.25	Temporary speed restriction due to rail defects
B-3	West-Park 3, Track 1	2.75	2.90	0.15	ROW maintenance
D-2	Park-East 2, Track 1	7.67	7.90	0.23	East Station Improvement Project
G-1	West-Park 1, Track 2	0.10	0.35	0.25	Temporary speed restriction due to rail defects
I-2	Park-East 2, Track 2	4.00	5.08	1.08	Temporary speed restriction due to improper elevation
I-4	Park-East 4, Track 2	7.67	7.90	0.23	East Station Improvement Project
Total				**2.19**	

3.5 Calculate Annual Average Performance Restriction Length

The final step in the calculation process is to calculate an annual average value for length of track miles under performance restrictions. The values calculated each month over the agency's fiscal year must be used for the calculation and the agency must record the resulting value for each combination of mode and type of service with rail fixed guideway. Table 5 shows an example of monthly values, tabulated by cause, and the resulting value reported to the NTD. Please note that NTD will not collect the monthly values or the causes of performance restrictions.

Further guidance on reporting procedures can be found in Section 2.1.

Table 5 - Example Breakdown and Calculation of Yearly Average of Track Miles under Performance Restriction, Tabulated by Cause

		Month												
		1	2	3	4	5	6	7	8	9	10	11	12	YTD AVG
Restriction Causes (Examples)	Maintenance	0.15	2.05	2.45	1.78	1.50	0.57	1.50	1.05	1.25	0.40	0.15	0.15	1.08
	Rail Defect	0.50	0.15	0.91	0.91	0.91	0.25	0.44	0.25	0.44	0.15	0.50	0.50	0.49
	Signal, Controls Issue	0.00	0.50	0.53	0.53	0.53	0.11	0.11	0.00	0.20	0.20	0.00	0.00	0.23
	Bridge Conditions	0.00	0.00	0.00	0.00	0.00	0.50	0.50	0.50	0.02	0.10	0.10	0.00	0.14
	Track Geometry	1.08	0.25	0.00	0.00	0.00	0.75	0.70	0.75	0.75	0.25	0.08	0.08	0.39
	Construction	0.46	0.00	0.00	0.00	0.00	1.20	1.20	3.00	2.00	0.00	0.00	0.46	0.69
	Other	0.00	0.31	0.31	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08
	TOTAL Under Performance Restriction (miles)	2.19	3.26	4.20	3.53	2.94	3.38	4.45	5.55	4.66	1.10	0.83	1.19	3.11

Appendices

Appendix A: Glossary

Note: Definitions are based on those in FTA's NTD Glossary where applicable

Aerial Tramway (TR)
A transit mode that is an electric system of aerial cables with suspended powerless passenger vehicles. The vehicles are propelled by separate cables attached to the vehicle suspension system and powered by engines or motors at a central location not on-board the vehicle.

Alaska Railroad (AR)
A public transportation system that shares vehicles and facilities with freight rail operations, the passenger services portion of which is eligible for FTA formula programs. The service encompasses only car miles for passenger cars; car miles for freight cars are specifically excluded.

Cable Car (CC)
A transit mode that is an electric railway with individually controlled transit vehicles attached to a moving cable located below the street surface and powered by engines or motors at a central location, not onboard the vehicle.

Commuter Rail (CR)
A transit mode that is an electric or diesel propelled railway for urban passenger train service consisting of local short distance travel operating between a central city and adjacent suburbs. Service must be operated on a regular basis by or under contract with a transit operator for the purpose of transporting passengers within urbanized areas (UZAs), or between urbanized areas and outlying areas. Such rail service, using either locomotive hauled or self-propelled railroad passenger cars, is generally characterized by:

- Multi-trip tickets
- Specific station to station fares
- Railroad employment practices
- Usually only one or two stations in the central business district

It does not include:

- Heavy rail (HR) rapid transit
- Light rail (LR)/streetcar transit service

Intercity rail service is excluded, except for that portion of such service that is operated by or under contract with a public transit agency for predominantly commuter services. Predominantly commuter service means that for any given trip segment (i.e., distance between any two stations), more than 50 percent of the average daily ridership makes a return trip on the same day. Only the predominantly commuter service portion of an intercity route is eligible for inclusion when determining commuter rail (CR) route miles.

Directly Operated (DO)
Transportation service provided directly by a transit agency, using their employees to supply the necessary labor to operate the revenue vehicles. This includes instances where an agency's employees provide purchased transportation (PT) services to the agency through a contractual agreement.

Exclusive Fixed Guideway
Synonymous with fixed guideway.

Fixed guideway (FG)
Fixed Guideway is a public transportation facility

- Using and occupying a separate right-of-way for the exclusive use of public transportation;
- Using rail;
- Using a fixed catenary system;
- For a passenger ferry system;
- For a bus rapid transit system.

Fixed guideway directional route miles (FG DRM)
The mileage in each direction over which public transportation vehicles travel while in revenue service on fixed guideway (FG). Fixed guideway directional route miles (FG DRM) include directional route miles (DRM) for:

- Rail modes (heavy rail (HR), light rail (LR), commuter rail (CR), inclined plane (IP), cable car (CC) and Monorail/Automated guideway (MG))
- Ferryboats (FB)
- Aerial tramways (TR)
- Bus (MB)
- Trolleybus (TB)
- Commuter Bus (CB)
- Bus Rapid Transit (RB); and
- Other modes on exclusive right-of-way (ROW) and controlled access right-of-way (ROW).

Fixed guideway directional route miles (FG DRM) do not include staging or storage areas at the beginning or end of a route.

Full Service Speed
The planned speed at time of installation at which vehicles can travel on a segment during normal operation, or the speed at which vehicles can travel on the segment absent any speed restriction on the segment.

Heavy Rail (HR)
A transit mode that is an electric railway with the capacity for a heavy volume of traffic. It is characterized by:

- High speed and rapid acceleration passenger rail cars operating singly or in multi-car trains on fixed rails
- Separate rights-of-way (ROW) from which all other vehicular and foot traffic are excluded
- Sophisticated signaling, and
- High platform loading.

Hybrid Rail (YR)
Rail system primarily operating routes on the national system of railroads, but not operating with the characteristics of commuter rail. This service typically operates light rail-type vehicles as diesel multiple-unit trains (DMU's). These trains do not meet Federal Railroad Administration standards, and so must operate with temporal separation from freight rail traffic.

Infrastructure Performance Measure
The infrastructure performance measure is the monthly average percentage of track segments under performance restriction, reported annually. Performance restrictions caused by issues with the rail fixed guideway, track, signals and systems should be considered in calculating the performance measure.

Inclined Plane (IP)
A transit mode that is a railway operating over exclusive right-of-way (ROW) on steep grades (slopes) with powerless vehicles propelled by moving cables attached to the vehicles and powered by engines or motors at a central location not onboard the vehicle. The special tramway types of vehicles have passenger seats that remain horizontal while the undercarriage (truck) is angled parallel to the slope.

Light Rail (LR)
A transit mode that typically is an electric railway with a light volume traffic capacity compared to heavy rail (HR). It is characterized by:

- Passenger rail cars operating singly (or in short, usually two car, trains) on fixed rails in shared or exclusive right-of-way (ROW);
- Low or high platform loading; and
- Vehicle power drawn from an overhead electric line via a trolley or a pantograph.

Monorail/automated guideway (MG)
Transit mode operating on exclusive guideway without using steel wheels on rails

Performance Restriction
A performance restriction is defined to exist on a segment of fixed guideway when the maximum permissible speed of transit vehicles is set to a value that is below the guideway’s full service speed. The performance restriction can be communicated through operating instructions, route signage, flaggers or an agency’s dispatch system. Performance restrictions may result from a

variety of causes, including defects, signaling issues, construction zones, maintenance work, or other causes.

Purchased Transportation (PT)
Transportation service provided to a public transit agency or governmental unit from a public or private transportation provider based on a written contract. The provider is obligated in advance to operate public transportation services for a public transit agency or governmental unit for a specific monetary consideration, using its own employees to operate revenue vehicles. Purchased transportation (PT) does not include:

- Franchising;
- Licensing operations;
- Management services;
- Cooperative agreements; or
- Private conventional bus service.

Segment
The TAM final rule defines the infrastructure performance measure as the percent of segments under performance restriction. It is suggested that agencies consider one segment to be defined to one one-hundredth of a mile (0.01 mi). By doing so, calculating the infrastructure performance measure in mileage yields the same result as calculating the measure in segments.

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. Section 5337.

Streetcar Rail (SR)
Rail transit mode operating predominantly on streets in mixed-traffic, typically single-car trains powered by overhead catenaries and with frequent stops.

Track Miles/Miles of Track
The number of tracks per one-mile segment of right-of-way (ROW). Miles of track are measured without regard to whether or not rail traffic can flow in only one direction on the track. All track is counted, including yard track and sidings.

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.

Appendix B: Sample Performance Restriction Calculation Form

The following is an example form an agency can use to implement the calculation approach described in Section 3. Note that to follow the recommended procedure an agency would complete the attached form each month for each combination of mode and service with fixed guideway directional route miles, and then report the annual average length of directional route mileage under performance restrictions by mode and type of service to the NTD.

Sample Performance Restriction Calculation Form

Note: the following is an example form and includes data items not strictly required for NTD reporting.

Mode:	Type of Service:
Date Data Collected:	Time Data Collected:
Completed By:	Date Completed:

Segment ID	Description	From	To	Track Miles	Full Service Speed (MPH)	Speed Restriction (MPH)	Performance Restriction (Y/N)	Performance Restriction