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Compliance Review Manual



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Cover photo of Silver Creek Cliff Tunnel on Route 61 in Silver Creek Township, Minnesota
taken by Jon Nekritz, FHWA Bridge Safety Engineer

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NTIP Compliance Review Manual

Introduction

This document provides guidance and direction to the FHWA Division Bridge Engineers in performing National Tunnel Inspection Program (NTIP) compliance reviews of State tunnel safety inspection programs. The term “reviewer” refers to the FHWA Division Bridge Engineer (DBE). The term “State” refers to either a State DOT or Federal agency responsible for tunnel safety inspections in accordance with 23 U.S.C. 144(h). The document is being provided to States and other tunnel owners for informational purposes only. The document is guidance only and does not create any requirements other than those stipulated in statute or regulations.

The NTIP is, in most aspects and by design, very similar to the National Bridge Inspection Program (NBIP). This document will not repeat the majority of the guidance given in the *NBIP Compliance Review Manual*, which can be applied to the NTIP, but rather will highlight some of the key differences and points to be emphasized in the NTIP reviews. Therefore, refer to the NBIP document for guidance related to the review process not found here, such as for a Plan of Corrective Action (PCA) or an Improvement Plan (IP), sampling and populations, additional file and field review guidance, State participation in field reviews, etc.

Background

In 2010, FHWA developed a new systematic, data-driven, risk-based oversight process for monitoring State compliance with the National Bridge Inspection Standards (NBIS). Based on the success of that process, FHWA has now developed a similar process for the recently implemented National Tunnel Inspection Standards (NTIS) required by 23 U.S.C. 144(h). This process utilizes 15 metrics, or measures, to define 1) the levels of compliance, 2) items from the NTIS to be measured, and 3) how those measurements affect the levels of compliance. Each metric can be traced directly to wording in 23 CFR 650 Subpart E. The metrics were developed over a 2-year period by a committee which consisted of FHWA Division, Resource Center, and Headquarters bridge and tunnel engineers. Refinements were made to the metrics based upon feedback received during development, including discussions based on pre-pilot evaluation of the metrics with a few States.

In 2017, the FHWA initiated a pilot program using the new process in eight additional States. The FHWA made further adjustments to the process and the metrics following these pilots, in preparation for nationwide implementation in June 2019.

Key Differences from NBIP Compliance Review Process

Implementation:

1. For the PY 2020 review cycle that begins June 1, 2019, the following phased plan is to be implemented:
 - a. Assess Metrics 1-4 and 15 at the Intermediate Assessment Level (Int-AL) per direction outlined in each metric;
 - b. Assess Metrics 5-14 at a ‘minimum level’ as follows:
 - i. Interview the Program Manager or others as necessary for each metric, to gain knowledge & awareness on the status of the inspection program area;
 - ii. Do not report a compliance determination for these metrics; however, discuss with your State the status and any actions needed before the following year’s Int-AL is conducted;
2. For the PY 2021 review cycle that begins June 1, 2020, complete Metrics 5-14 at the Int-AL per direction outlined in each metric.
3. For the remaining 3 years in the first 5 year cycle, complete additional Int-AL reviews as needed based on guidance given throughout this document.

Also, refer to the section below entitled ***5-year review cycle***.

Metrics:

The NTIP metrics mirror the NBIP metrics to the extent practical, given differences in the two programs. For example, Metrics 1 & 2 are basically the same as the NBIP, but with minor adjustments to account for differences in the regulations, one difference being the NTIS requirement to maintain a registry of certified tunnel inspectors. There is no NTIP metric for Load Rating Engineer (NBIP Metric 4), as one is not required in the NTIS. There is a metric dedicated to functional systems testing because of regulation requirements and due to the complexity of a large percentage of tunnels. There is only one metric for tunnel-specific inspection procedures, compared to several for bridge.

The metric for inspection quality has assessment differences from the NBIP Metric 12 due to the large difference in the number of tunnels in each State, with some having no tunnels at all. Nationally, there are currently over 615,000 bridges, and nearly 500 tunnels. Another difference is the relative complexity of many tunnels, and the challenges with field reviews this would

cause. Both of these factors has led to a much smaller number of tunnels to be field reviewed each year.

Sampling:

Sampling is employed in several of the metrics, similar to the bridge metrics. However, often the population is very small, with an average number of nine tunnels per State having tunnels. Therefore, the sample size is often the same, or nearly the same, as the population. The sampling method was still deemed to be appropriate however, especially for those States with more tunnels, such as California with over 60. It is suggested that metrics requiring sampling be done at the Intermediate Assessment Level (Int-AL) in the same year for efficiency.

Sampling Tool and Metric Assessment Reports (MARs):

There is no Sampling Tool developed for the NTIP review process, due to the small number of tunnels per State. It is envisioned that the reviewer obtain or generate a list of tunnels in spreadsheet format, to generate random numbers, samples and perform other data analysis as required by the individual metrics. Therefore, MARs will not be made available.

Emphasis Areas

Review scheduling and assessment levels:

In general, perform an Int-AL review of each metric Statewide at least once every 5 years to ensure compliance with the NTIP. For example, if last done in PY 2019, it must be re-done by PY 2024 except in rare cases as approved by the Bridge Safety Engineer (BSE) in the Office of Bridges and Structures. The Int-AL reviews are encouraged more often than every 5 years when needed or desired to fully ascertain performance or compliance of all entities of a State. Conversely, the 5-year period for Int-AL should only be exceeded upon concurrence from the BSE.

Specifically, Int-AL reviews should be performed the year following a Min-AL review in which the review or other knowledge indicates regression in the State's performance. For multiyear PCAs, Int-AL reviews are encouraged during a PCA as necessary to fully ascertain progress of a PCA. The Int-AL is required immediately after completion of a PCA and encouraged after completion of an IP. This follow up Int-AL is usually conducted in the review year following completion of the PCA, but can be done in the same year if the PCA is completed early in the review year and the schedule permits. Metrics that require sampling at the Int-AL should only be performed after a year where tunnels have been inspected, so that there are recent reports and data to be assessed.

Review of inspection reports and field reviews:

The review of complex tunnels can be similar to complex bridges, but with key differences. Like a complex or large bridge, or a bridge with difficult access, a representative portion of a complex tunnel should be reviewed, but typically not the entire tunnel if safety or total review time is an issue. The total field review time for any tunnel is not expected to exceed 8 hours.

An effort should be made to review the structural elements of more than one segment in different sections of the tunnel where differing conditions are expected to exist. For example, review at least one end segment and portal area that can normally be viewed from a shoulder while facing traffic, plus at least one internal segment that can be viewed from a sidewalk or side room area. Sometimes a review can be scheduled during a maintenance or inspection activity. In some cases, it may be most beneficial to review during an inspection so that actual inspection procedures can be observed; in other cases, it may be best to review during a maintenance activity in the off-inspection year so that the inspection report from the previous year's inspection is available.

A field review is to be completed every year, at either the minimum, intermediate, or in-depth assessment level. An exception is if all tunnels have already been reviewed, and none have yet received a subsequent inspection, then there is no need to re-review until another inspection is completed. For some States with only one or two tunnels, this may mean there are no tunnels to review in the off-year of the inspection cycle.

Review of a recently completed inspection report is a key aspect of ascertaining the quality of tunnel inspection findings. The inspection report should be reviewed prior to the field review to help focus areas to review when physically there, and familiarize the reviewer with specific concerns or attributes of the specific tunnel. In some cases, it is acceptable to perform the review during a live inspection, but in those instances the prior report should still be examined for obvious discrepancies with field findings, keeping in mind that documented findings are two years old and may differ from current conditions. However, this approach also allows the reviewer to follow up after the inspection to ensure the newly documented inspection findings are consistent with the reviewer's field observations. If the new inspection report is reviewed prior to December 31, include it in the current review's findings. If the inspection report is not reviewed or not available until after December 31, it is the reviewer's option to review the report at a later date, but any findings should not be applied to the review year that the tunnel was selected for review. Instead, it should contribute to the knowledge and awareness of the inspection program, and any deficiencies should be communicated to the State for their awareness.

Review Process Overview

The following is based on the NBIP program guidance, modified as needed for tunnels:

Each FHWA Division Office will annually assesses State compliance with 15 individual metrics that are directly aligned with the existing NTIS regulation. Once implemented, the risk-based assessment process followed during this annual assessment utilizes objective data and employs statistical sampling of data and inspection records. The FHWA Division Office uses the established criteria contained in the Metrics for the Oversight of the National Tunnel Inspection Program (NTIP) for assessing compliance for each metric. The State is notified by FHWA of any metric that has a finding of noncompliance no later than December 31 of each year. In accordance with the requirements of 23 U.S.C. 144(h)(4)(B) as established by the Moving Ahead for Progress in the 21st Century Act (MAP-21), within 45 days of the FHWA notification of noncompliance, the State will correct the noncompliance or submit to the FHWA a Plan of Corrective Action (PCA) which outlines how noncompliant findings will be corrected. The FHWA will have 45 days to review, comment, and, if appropriate, accept the PCA. The FHWA will make final compliance determinations for each of the 15 metrics no later than March 31. If a State remains in noncompliance for any of the metrics on August 1 following a final determination of noncompliance, FHWA will implement a penalty provision which requires the State to dedicate funds to correct the noncompliance, in accordance with 23 U.S.C. 144(h)(5). This annual process allows FHWA to assess whether an applicable State's tunnel inspection program complies with the NTIS, and to implement any required penalties for metrics which remain in noncompliance in a nationally consistent manner.

Metrics

The metrics established by the NTIS regulation at 23 CFR part 650 subpart E are examined to assess each State's compliance with the NTIS. Each metric is assessed as equally important; noncompliance by the State DOT with any metric can result in FHWA assessing a penalty.

Each metric consists of four parts:

NTIS Component To Be Reviewed

This section of the metric identifies the relevant provisions of the NTIS and focuses on a key inspection area for which compliance will be assessed.

Evaluation Criteria

This section of the metric identifies the criteria for evaluation of compliance.

Compliance Levels

Each of the 15 metrics is annually assessed by FHWA and assigned one of four compliance levels -- compliant, substantially compliant, noncompliant, or conditionally compliant -- based upon specific thresholds or measures for each compliance level for each metric. The degrees of compliance are described as follows:

Compliant:

Adhering to the NTIS regulation.

Substantially Compliant:

Adhering to the NTIS regulation with minor deficiencies, as set forth in the Metrics for the Oversight of the National Tunnel Inspection Program (April 1, 2019). These deficiencies do not adversely affect the overall effectiveness of the program and are isolated in nature. Documented deficiencies are provided to the State with the expectation that they will be corrected within 12 months or less, unless the deficiencies are related to issues that would most efficiently be corrected during subsequent inspection cycles. An IP describing the expected corrective action should be developed and monitored for improvement toward compliance. Lack of improvement over multiple cycles may result in noncompliance.

Noncompliant:

Not adhering to the NTIS regulation; in general, failing to meet one or more of the substantial compliance criteria for a metric. Identified deficiencies may adversely affect the overall effectiveness of the program. Failure to adhere to an approved PCA is also considered noncompliance. Metrics which remain as noncompliant will invoke the penalty for noncompliance.

Conditionally Compliant:

Taking corrective action in conformance with an FHWA-approved PCA to achieve compliance with the NTIS. Deficiencies, if not corrected, may adversely affect the overall effectiveness of the program. Metrics which are determined to be conditionally compliant will not invoke the penalty for noncompliance.

The following definitions apply to actions taken to address findings of substantial compliance and noncompliance, respectively:

Improvement Plan (IP)

A written response by the State which documents the agreement for corrective actions to address deficiencies identified in a substantial compliance determination. The completion timeframe for such agreements is typically 12 months or less, unless the deficiencies are related to issues that would most efficiently be corrected during subsequent inspection cycles.

Plan of Corrective Action (PCA)

A documented actions agreement prepared and submitted by the State and approved by FHWA describing the process and timelines to correct noncompliant NTIS metrics. The term “corrective action plan” in MAP-21 is interchangeable with PCA.

Assessment Levels

The assessment levels represent a key part of the data-driven, risk-based approach to compliance review that FHWA has implemented. The FHWA will conduct the yearly compliance review for each metric at one of three assessment levels. Assessment levels define the scope of FHWA’s review necessary to make a compliance determination for a specific metric. There are three assessment levels:

Minimum Assessment Level (Min-AL)

A review based on information from past assessments and the FHWA Division Bridge Engineer’s knowledge of the current practice as it relates to the metric. For some metrics, a minimum level assessment is enhanced with interviews and/or data review. The minimum level assessment can range from a very brief consideration of the metric with respect to any changes in the program since the last assessment to a more detailed look at summary data from tunnel inventories, pertinent lists, and a review of historical trends.

Intermediate Assessment Level (Int-AL)

Verifying the minimum level assessment through sampling of inspection records, analysis of tunnel inventories, site visits, interviews, and review of documentation. The intermediate level assessment involves Tier 1 random sampling using a margin of error (MOE) of 15 percent and a level of confidence (LOC) of 80 percent to review tunnel records or as directed in the individual metrics. A Tier 2 random sampling, utilizing a

MOE of up to 10 percent and LOC of 80 percent, is used when the results of the Tier 1 sample are inconclusive.

In-depth Assessment Level (InD-AL)

This level is the most intensive and is used to supplement the methods described in the Int-AL with larger random sample sizes, more interviews, or research of records and documentation, and/or history. There are two ways to perform an InD-AL: Division and nationally directed. For the Division InD-AL reviews, the reviewer develops guidelines in addition to the Int-AL as appropriate for the metric or issue being assessed, with concurrence from the BSE, and conducts the review in accordance with guidelines. The coordination with the BSEs is necessary to assure national consistency for the process.

Annual Review Schedule and 5-Year Review Cycle

In accordance with 23 U.S.C. 144(h)(4), the FHWA will annually review State compliance with the NTIS.

Annual review schedule

Each FHWA Division Office will conduct an annual assessment of the State's compliance with the NTIS. Key dates are as follows:

1. April 1 – The FHWA Division office begins planning the review. The NTIP review cannot begin until the State's National Tunnel Inventory (NTI) submission has been accepted.
2. June – December – The FHWA Division Office conducts the compliance review, assessing each metric.
3. December 31 – The FHWA Division Office makes a documented compliance assessment, referred to as the “December 31 Compliance Determination” for each metric, and notifies each State detailing issues of noncompliance.
4. March 31 – Final compliance determination completed for all metrics. The final determination is based on the resolution of compliance issues or development of an acceptable PCA following the December 31 notification.

The proposed schedule may need to be modified on a case-by-case basis when unique and unexpected extenuating circumstances arise. The FHWA will address this issue on a case-by-case basis when it arises.

5-year review cycle

The FHWA Division Office will take the following actions as part of the 5-year review cycle:

1. Assess each metric annually at the minimum level if an intermediate or in-depth level is not to be performed that year.
2. Assess each metric at the intermediate or in-depth level at least once within the 5-year cycle.
3. Adopt a 5-year plan which identifies the review strategy and schedule based upon the consideration of risk, including the results of previous assessments. The assessment level for each metric will vary at the discretion of the FHWA Division Office from minimum, intermediate, or in-depth, or as directed at the national level. The FHWA Division Office will update the 5-year plan as necessary based on the risks identified during the annual metric assessments.
4. After year five, examine the 5-year review history to identify trends in each metric area, to identify any gaps in the program or review process, and to develop a review strategy for the next 5 years.
5. At the completion of a PCA, assess the metric at the intermediate level or in-depth level.

The determination of either an intermediate or in-depth level review after completion of a PCA is at the discretion of the FHWA Division Office.

Findings of Noncompliance

The FHWA Division Office will issue a signed report to the State detailing the issues of noncompliance for a metric determined to be noncompliant by December 31 of the review period. The report will list the regulatory code and title for each noncompliance deficiency, identify the deficiency, and specify that the deficiency has to be corrected, or a PCA submitted within 45 calendar days of notification. The State will have 45 days to either correct the issue of noncompliance or submit a PCA to FHWA as required by 23 U.S.C. 144(h)(4)(B). The PCA should include the following information:

1. Identify area of noncompliance;
2. Identify the date FHWA notified State of noncompliance;
3. Identify actions to be taken to address areas of noncompliance;
4. Estimate duration and completion date for each action;

5. Define frequency and reporting format which will be used to monitor; progress towards successful completion of the PCA; and
6. Identify what the State considers to be successful completion of PCA.

After the State submits a PCA, FHWA will have 45 calendar days to review and if appropriate, accept the submitted PCA. Upon FHWA acceptance of the PCA, the final compliance determination for the associated metric will be conditionally compliant. If the PCA is not submitted to FHWA in 45 calendar days after notification of noncompliance, or the PCA does not address the issues of noncompliance, the final compliance determination for the associated metric will be noncompliant.

Where an issue of noncompliance with the NTIS is identified outside the review procedures above, FHWA will notify the State of the noncompliance and will work with the State to establish a timeframe in which the issue of noncompliance must be addressed or an acceptable PCA submitted.

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Metric #1: Tunnel inspection organization

NTIS Reference: 23 CFR 650.507– Tunnel inspection organization

Criteria

- An organization is in place to inspect, or cause to inspect, all highway tunnels on public roads.
- Organizational roles, and inspection responsibilities, policies and procedures are clearly defined, documented, and carried out.
- Functions delegated to others through a formal written agreement are clearly defined.
- Inspection responsibilities for a jointly owned tunnel should be determined through a formal written agreement.
- A qualified program manager (PM) is assigned the responsibility for the NTIS.
- A registry of nationally certified tunnel inspectors (NCTIs) that work in the State is maintained.

Population

N/A

Compliance Levels

Compliance (C): All of the following must be met for C:

- An organization is in place that effectively ensures that all highway tunnels on public roads are inspected.
- Organizational roles and responsibilities are clearly defined, documented, and carried out.
- Any delegated functions are clearly defined with the necessary authority established.
- Formal written agreements, as applicable, are in place and fully documented.
- Responsibility for the NTIS is assigned to a PM.
- A registry of nationally certified tunnel inspectors that work in the State is up-to-date and comprehensive.

Substantial Compliance (SC): All of the following must be met for SC:

- An organization is in place that effectively ensures that all highway tunnels on public roads are inspected.
- Organizational roles and responsibilities are clearly defined, documented, and carried out; isolated deficiencies exist but do not adversely affect the overall effectiveness of the program.
- Delegated functions are defined with authority established to resolve safety issues.

- Functions delegated to others are defined and completed, and agreements are in place but have not been formalized.
- Formal written agreements for jointly owned tunnels are in place but not fully documented.
- Responsibility for the NTIS is assigned to a PM.
- A registry of nationally certified tunnel inspectors is maintained, but may have minor inadequacies.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Not Applicable (NA): There are no structures identified as a tunnel in the State’s inventory, and as verified by reviewer.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results, the reviewer’s knowledge and awareness of the tunnel inspection program, and from the current assessment of the other metrics.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Verify organizational roles, responsibilities, and delegation procedures, as applicable, are documented and being followed.
- Assess overall effectiveness of organization through assessment of other metrics and interview of PM.
- If functions are delegated, assess effectiveness of the process through interview of PM and some individuals with delegated functions.
- Sample certified tunnel inspectors on the registry to verify qualifications.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #1: Commentary

General:

The purpose of this metric is to determine if the State or Federal agency (State) has an appropriate organization in place, and if the organization is effective as indicated by assessment of the other metrics. Therefore, this metric may not be fully assessed until the remaining metrics are fully assessed.

According to the TOMIE Manual, the following should be considered when assessing the organization:

- Effectiveness of the organization
 - Policies and procedures
 - QC/QA
 - Preparation and maintenance of a tunnel inventory
 - Tunnel files (database management)
- Designated & Qualified PM
- Training Program
 - Process in place to ensure TL are qualified
- Appropriate quantity of TLs and inspectors
- Database management – update and maintain
- Interaction between PM, TLs and Load Rating Engineer
- Load Rating Engineer reviewing load ratings
- Tunnel inspection findings are communicated to correct work group
- Adequate funding for inspection related activities
 - Timeliness of contracts
 - Ability to fund analyses or inspections
- Multi-disciplinary group for developing policies and procedures – especially when dealing with functional systems and geotechnical concerns
- Responsiveness to safety issues (critical findings and operational items)
- Availability of access equipment and traffic control maintenance
- Extended interval policy exists for tunnels with extended inspection intervals

Criteria:

Part of the assessment of determining whether an organization is in place to inspect, or cause to inspect, all highway tunnels on all public roads on and off Federal-aid highways is to determine that the necessary authority is established by the State to take needed action to implement a fully effective program and ensure NTIS compliance.

All highway tunnels on all public roads are to be inspected under the NTIS. This does not apply to structures that are bridges or culverts as determined under the NBIS. Further guidance on tunnel versus bridge distinctions is contained in the October 27, 2015 memorandum from the Office of Bridges and Structures.

The *policies and procedures* required in this metric are those which govern and direct the tunnel inspection organization, and specify roles, responsibilities and practices throughout the organization. Inspection procedures for specific tunnels are not evaluated here, but under Metrics 6-13

The States must have written agreements with other owners to establish the proper authority necessary to ensure the NTIS is carried out correctly. When functions are delegated to other entities such as district offices, local agencies, toll authorities, port authorities, etc., the delegation procedures must be clearly documented in a written agreement. The State must be able to collect NTIS data from others, i.e. counties, toll authorities, consultants, etc. to ensure NTIS compliance. These entities or other owners must be given clear direction for assigned or delegated roles or tasks, and they must also understand what hasn't been delegated. For example, a State district office with a delegated PM and inspection teams must understand the extent of their duties and how they are to communicate and relate to the main PM in the central office.

When tunnels are jointly owned with other agencies, a formal agreement should clearly document who is responsible for inspecting and maintaining the tunnel and important points of contact for coordination of activities.

The *registry of nationally certified tunnel inspectors* is required, at a minimum, to: 1) positively identify each inspector, 2) document each inspector's training requirements are up-to-date, 3) list the inspector's current contact information, and 4) include detailed information about any adverse action that may affect the good standing of the inspector. A best practice for the State would be to expand this registry to also include any information necessary for team leader qualification, allowing them to capture all information in a single source – PE registration, types and amount of experience, comprehensive and refresher training, qualified to be a TL of what types of tunnels, etc.

Compliance levels:

The term *safety issues* are those related to tunnel closure, posting, critical findings, and overdue inspections. For C, the phrase *necessary authority established* is inclusive of these safety issues and all other aspects of delegated functions. For SC, the 'authority established' for these safety issues is a minimum.

Formal written agreements should be made to establish inspection responsibilities for jointly owned tunnels, and they are required to identify delegated inspection functions to another

[ToC](#)

individual or agency. For SC, *Functions delegated to others are defined and completed, and agreements are in place but have not been formalized* means there is informal documentation, but has not been signed by all parties.

If other metrics are non-compliant, conduct a careful evaluation to determine whether those non-compliance issues stem from deficiencies in the organizational structure itself. If so, then a finding of SC or NC is appropriate for this metric. This is not directly related to the number of metrics in NC or CC, but whether issues are caused by deficiencies in the organization. Another consideration is if existing PCAs are on schedule, and if not, whether the reason stems from organizational issues.

Another example of an organization deficiency is when a PM is assigned the responsibility for the NTIS, but with limited authority to ensure delegated functions are carried out due to conflicting local laws, policies, or organizational structure. This would lead to either SC or NC, depending on the severity of the issue.

Assessment levels:

At the Int-AL, consider interviews with individuals who have been delegated inspection functions for one or more agencies, districts, consultants, etc., represented in those tunnels selected for field review under Metrics 6, 7, and 14.

Metric #2: Qualifications of personnel – Program Manager

NTIS Reference: 23 CFR 650.509 (a) – Program Manager; 650.507(e)(4) – Tunnel Inspection Organization Responsibilities; 650.509 (e) Nationally Certified Tunnel Inspector

Criteria

- The Program Manager (PM) is either a registered Professional Engineer (PE) or has ten years of tunnel or bridge inspection experience.
- In addition to the above qualification, the PM must be a nationally certified tunnel inspector and
 - Complete an FHWA-approved comprehensive tunnel inspection training course, scoring 70 percent or greater on an end-of-course assessment.
 - Complete a cumulative total of 18 hours of FHWA-approved tunnel inspection refresher training over each 60 month period.
 - Maintain their own supporting documentation of training completed.
- Be able to determine when team leaders must meet additional requirements for complex or other tunnels.

Population:

The individual designated as PM.

Compliance Levels

Compliance (C): All of the following must be met for C:

- The PM has the required qualifications.
- PM is able to determine when team leader must meet additional requirements for complex or other tunnels.
- Documentation of PM qualifications is maintained.

Substantial Compliance (SC): All of the following must be met for SC:

- PM has required qualifications except;
- A newly designated PM has not completed comprehensive tunnel inspection training, but is scheduled to do so within 6 months after selection to the PM position.
- The PM has not completed cumulative total of 18 hours of FHWA approved tunnel inspection refresher training over the most recent 60 month period, but is scheduled to have completed it within 72 months.
- PM is able to determine when each team leader must meet additional requirements for complex or other tunnels.

- Documentation of PM qualifications is maintained.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results, and the reviewer's knowledge and awareness of the PM's qualifications.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Verify qualification of Program Manager through interview of PM and through review of documentation.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #2: Commentary

General:

The purpose of this metric is to evaluate the qualifications of the designated State PM, not any others that may have delegated duties similar in scope to a PM. The designated State PM is ultimately responsible for all aspects of the program, even if some functions are delegated to districts, consultants, local agencies, or others.

Criteria:

The PM is required to complete 18 hours of FHWA-approved refresher training every 60 months. For example, if the PM attended and successfully completed the comprehensive training course in August 2015, the PM would have to complete the 18 hours of refresher training by August 2020. If the PM completed it in July 2019, the PM then has 60 months to complete the next 18 hours of training, or by July 2024. Training can be achieved all in one training course, or possible through shorter sessions of refresher training over the 60 month period.

It is up to the PM to establish, or not establish, any additional TL qualification requirements for inspecting complex or other tunnels with distinctive features or functions that warrant additional qualification requirements.. The intent is to allow flexibility for the States to determine this based on the tunnel's unique features or functions. The PM must be able to establish criteria by considering a tunnel's type of construction, functional systems, history of performance, and physical and operational conditions.

Compliance levels:

Qualifications include being either a registered PE, or having ten years of tunnel or bridge inspection experience; and be on the nationally certified tunnel inspectors registry.

A PM exceeding the training intervals by 6 and 12 months, to complete FHWA comprehensive tunnel inspection or refresher training courses, respectively, is determined to be SC. Since the PM is managing the program and is not actually involved in performing inspections in the field, this additional time is judged to have a minor effect upon the quality of the tunnel inspection program.

The term designated PM refers either to an acting assignment or a permanent assignment of an individual to the position.

Documentation can be provided at the time of interview or by end of the annual assessment process. Documentation requirements for Compliance and Substantial Compliance are the same.

If a PM, or an acting PM, is qualified but there are issues relating to lack of overall responsibility, sufficient authority, or effectiveness, this will affect the compliance determination of Metric 1, but not Metric 2.

Assessment levels:

If a new PM is designated, perform an Int-AL in the same year if possible, or in the subsequent year if not.

Metric #3: Qualifications of personnel – Team Leader(s)

NTIS Reference: 23 CFR 650.509 (b) - Team leader(s) and 650.509 (e) Nationally Certified Tunnel Inspector

Criteria

- Each Team Leader (TL) must have at least one of the following qualifications:
 - PE registration with 6 months of tunnel or bridge inspection experience.
 - Five years of tunnel or bridge inspection experience.
 - Bachelor's degree in engineering from ABET-accredited college or university, successfully passing the Fundamentals of Engineering exam, and two years of tunnel or bridge inspection experience.
 - Associate's degree in engineering from ABET-accredited college or university, and four years of tunnel or bridge inspection experience.
- In addition to the above qualification, TL must be a NCTI:
 - Complete an FHWA-approved comprehensive tunnel inspection training course, scoring 70 percent or greater on an end-of-course assessment.
 - Complete a cumulative total of 18 hours of FHWA-approved tunnel inspection refresher training over each 60 month period.
- All TLs for complex tunnels must be registered PEs with 6 months of tunnel and/or bridge inspection experience, and if applicable, must have additional qualifications as determined by an FHWA-approved process.
- All TLs shall maintain supporting documentation of their training completed.

Population

All TLs for all inspection types requiring TLs for inspections performed from January 1 of the calendar year prior to the beginning of the review year.

Compliance Levels

Compliance (C): All of the following must be met for C:

- All TLs have the required qualifications.
- All TLs are nationally certified tunnel inspectors, with the required training.
- All TLs for complex tunnels are PEs with 6 months of tunnel or bridge inspection experience.
- All TLs have supporting documentation of training completed.

Substantial Compliance (SC): All of the following must be met for SC:

- All TLs have the required qualifications.
- All TLs have successfully completed FHWA-approved comprehensive tunnel inspection training.
- One or more TLs have not completed required refresher training within 60 months, but are scheduled to have completed it within 72 months.
- All TLs for complex tunnels and tunnels with distinctive features or functions are PEs with 6 months of tunnel or bridge inspection experience..
- All TLs have supporting documentation of training completed.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results, and the reviewer's knowledge and awareness of process for monitoring TL qualifications.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample the TLs to review qualifications, including dates of comprehensive and refresher training.
- Interview the PM or supervisors to verify qualifications when documentation of qualifications is inconclusive.

In-Depth Assessment (InD-AL): In addition to the Int-AL:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #3: Commentary

General:

This metric is to verify the team leaders performing inspections, during the period defined in the population below, are qualified. Metric 6 then verifies that team leaders are on site during each tunnel inspection, and the team leaders noted in the inspection reports reviewed are included on the list of team leaders for the review year. This metric verifies the TL is a nationally certified tunnel inspector (NCTI). The quality and accuracy of the NCTI registry maintained by the State PM is evaluated under Metric 1.

Criteria:

For complex tunnels and tunnels with distinctive features or functions, the team leader shall be a registered PE and have six months of tunnel or bridge inspection experience. There may be additional qualifications to verify which are determined by the Program Manager, through a process that has been approved by FHWA, addressing a tunnel's type of construction, functional systems, history of performance, and physical and operational conditions (See 23 CFR 650.507(e)(4)).

Population:

This metric applies to TLs for initial, routine, and in-depth inspections. The population for each review year is limited to TLs that have inspected tunnels from January 1 of the calendar year prior to the start of the review year (example: the PY 2020 review that starts 4/1/19, includes all TLs that have inspected from 1/1/18 thru 3/15/2019). This is to minimize overlap from one review year to the next. The Actual Routine Inspection (SNTI Item D.2) and In-Depth Inspection (SNTI Item D.4) data fields in the tunnel inventory should be used for establishing the dates for this population.

Compliance Levels:

As the TL qualifications are of primary importance, 100% of all components of the TL requirements shall be met, for each TL sampled, for a determination of this metric to be Compliant. For a determination of Substantial Compliance, a minor discrepancy with a TL's tunnel inspection refresher training is allowed, with an additional 12 months provided for the TL to schedule and obtain the training. Note: if the TL does not obtain the refresher training within the additional 12 months, any inspections the TL was responsible for in that time period will be nullified and must be redone by a different fully qualified TL.

Assessment levels:

When selecting the year(s) to conduct an Int-AL, be aware of how the population of TLs is defined above. If all or most tunnels are inspected in one calendar year, make sure the Int-AL looks at the TLs when those inspection TLs can be best reviewed.

Request a list from the State PM of TLs comprising the population defined above. Sample this list for the assessment level desired, and verify each TL in the sample is qualified using a combination of documents from the State's CTI registry, the TL, and other sources such as the State licensing bureau for PEs, the NHI for course certifications, etc. The documentation shall support all the requirements of a Team Leader as called for in 23 CFR 650.509 (b) and enumerated under the criteria for this metric. Note: if certificates of training cannot be produced and the training was provided by NHI, transcripts can be requested from NHI for courses completed within the past seven-years of the current year. Each student's transcript will show the courses attended and the number of CEUs earned – NHI does not print a new copy of a certificate. Request for transcripts can be sent to NHIRegistrar@dot.gov.

Assign random numbers to the TLs on the list provided by the State PM, reorder them sequentially by the random number, and then starting at the top and continuing down select the quantity required for the Intermediate assessment level.

Metric #4: Inspection interval – Initial and Routine

NTIS Reference: 23 CFR 650.511 (a) – Initial inspection, (b) – Routine inspections

Criteria

- For tunnels completed after the NTIS has taken effect, the initial routine inspection is conducted after all construction is completed and prior to opening to traffic.
- Each tunnel has an established NTIS Routine Inspection Date (RID) for determining timing of future inspections.
- Subsequent routine inspections are conducted within 2 months before or after the established RID, typically on 24-month intervals.
- For tunnels needing inspection more frequently than 24-month intervals, criteria is established based on risk analysis to determine the level and frequency of inspection.
- A policy for extended inspection intervals up to 48 months, if applicable, has been established and submitted to FHWA for review and comment prior to the policy being implemented.

Population

Tunnels for the entire State that are open to traffic, and whose inspection dates have changed since the previous year's NTI submission or whose inspections are overdue.

Compliance Levels

Compliance (C): All of the following must be met for C:

- If construction was completed after the NTIS took effect, the initial routine inspection was conducted after all construction was completed and prior to opening to traffic.
- All tunnels inspections are conducted within 2 months before or after the targeted RID.
- If applicable, there is a documented extended interval policy that has been submitted to FHWA for review and comment prior to the policy being implemented.
- All tunnels with extended inspection intervals conform to the policy.
- Criteria is established based on risk analysis for tunnels requiring inspection at intervals less than 24 months.

Substantial Compliance (SC): All of the following must be met for SC:

- Initial routine inspections were conducted after construction of all elements, except for some or all civil, signage, or protective system elements which were not yet completed, and prior to opening to traffic.
- At least 90% of tunnel inspections were initiated within 2 months before or after the

targeted RID, but all inspections were initiated within 4 months before or after the targeted RID.

- There is an extended inspection interval policy, but it is not fully documented. It is clear that most, but possibly not all, required factors were considered.
- All tunnels with extended inspection intervals conform to the policy.

Non-Compliance (NC): One or more SC criteria not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Review NTI submittal data to resolve all overdue inspections.
- Review NTI submittal data to determine number of inspections conducted within 2 months before or after targeted RID.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Review a sample of current and previous inspection reports to confirm dates provided in the NTI.
- Verify that a documented extended inspection interval policy, as applicable, exists and considers the appropriate factors.
- Review a sample of tunnels coded for extended intervals to verify they meet the approved criteria for extended intervals in the State.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #4: Commentary

General:

The purpose of this metric is to assess if routine tunnel inspections are exceeding their prescribed intervals, including a 2-month tolerance on each side of the established Routine Inspection Date (RID). The RID is measured by month/year, even though it is recorded in the format month/day/year. Therefore, a routine inspection which is initiated within the 5 month window, 2 calendar months before or after the month of the RID, is considered within acceptable tolerances per the NTIS. This RID date should only be modified by the Program Manager in rare circumstances.

Routine inspections of some tunnels may take more than a day, in some cases several weeks, depending on the complexity and size of the tunnel. For those situations, the NTIS defines the actual inspection date to be recorded in the NTI as the date (MM/DD/YYYY) the inspection began, hence the occasional reference to when the inspection was initiated.

An initial inspection of existing tunnels must be performed within 24 months of the date the NTIS became effective (August 13, 2015). This is a one-time occurrence. New tunnels constructed after this date are to receive an initial inspection upon completion of all construction and prior to opening to traffic.

Criteria:

The extended inspection interval policy must consider the following factors:

- Tunnel age, including last major rehabilitation
- Tunnel complexity (geometry, etc.)
- Traffic characteristics
- Geotechnical conditions (soils/rock competency, ground water, slope stability, seismic, etc.)
- Functional systems (ventilation, etc.)
- Known deficiencies

There are no established thresholds for each of these items because each State's policy is expected to have unique factors to consider. The policy should determine both level and frequency of inspections based on these considerations.

Population:

The population is defined to eliminate review of the same inspection interval for the same tunnel in successive review years. It also includes tunnels indicated by the submitted data to be overdue

for inspection – those inspections that were due prior to the NTI submission date but did not have a new inspection date submitted. The analysis includes the 90 day NTIS allowance for entering data and an additional 30 days for compiling of the submittal.

Compliance levels:

If an extended interval factor changes between the 24th and 48th month that necessitates changing the interval back to 24 months, do not consider a tunnel at 36 months to be delinquent.

All tunnels with extended inspection intervals are to be reassessed by the TL or PM for compliance with the extended interval policy when inspected, when changed conditions are observed, or when the policy is revised.

Assessment levels:

Considering the size of the inspection inventory for tunnels of a given State or Federal agency, it should be relatively easy to determine if an inspection is overdue or if the inspection date is within the allowable tolerance around the targeted RID. This can be accomplished by importing the NTI data into an Excel spreadsheet and compare the established NTIS RID to the actual routine inspection date.

At the Int-AL, tunnels inspected following an approved extended interval policy should be checked to ensure that the tunnels continue to meet the criteria for that policy. As some of the criteria in the policy is linked to traffic volume or tunnel condition, as these items change with time, it should result in appropriate changes to a tunnel meeting the extended interval policy.

Metric #5: Inspection interval – Damage, In-Depth & Special Inspections

NTIS Reference: 23 CFR 650.511 (c) – Damage, In-Depth and Special Inspections

Criteria

- Criteria are established to determine the level of inspection, and frequency for all of the following inspection types where appropriate:
- Damage inspections
- In-depth inspections
- Special inspections

Population

Tunnels meeting established criteria for the entire State, are open to traffic, and whose inspection dates have changed since the previous year's NTI submission or are overdue.

Compliance Levels

Compliance (C): All of the following must be met for C:

- All criteria are established and fully documented.
- Records for all tunnels indicate the appropriate level of inspection was performed, at the appropriate frequency, if applicable, in accordance with the established criteria.

Substantial Compliance (SC): All of the following must be met for SC:

- All criteria are established but not fully documented. There are minor deficiencies with the criteria established, or the criteria are not totally clear.
- Records for all tunnels indicate the inspections were performed in accordance with the established criteria with minor or isolated deficiencies, but the deficiencies do not adversely affect the safe operation of the tunnel, and in all cases to not exceed interval by more than 50% of specified interval, or 4 months, whichever is less.

Non-Compliance (NC): One or more SC criteria not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results, the reviewer's knowledge and awareness of the State's level of inspection and frequency criteria.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Review established level of inspection and frequency criteria.
- Randomly sample tunnels that have had one or more of these inspections performed, using data from NTI, and review tunnel inspection records for adherence to established criteria.
- Randomly sample all tunnels to verify that all inspections were completed per criteria, using information sources as necessary other than NTI data, to determine if any inspections should have been performed but were not completed.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #5: Commentary

General:

The purpose of this metric is to assess the development and implementation of inspection criteria for damage, in-depth and special inspections. Sampling is used to determine if established criteria are being followed.

A Team Leader is not required by the NTIS to perform damage or special inspections; the agency has the flexibility to determine the required qualifications for these types of inspections. A TL is required for all in-depth inspections.

The tunnel specific inspection procedures which are assessed in Metric 7 should establish when planned in-depth and/or special inspections will be performed for each tunnel. Therefore the review of Metric 5 and Metric 7 should be coordinated, especially at the Int-AL. Under this metric, Metric 5, the reviewer will ensure that each inspection performed conforms to the frequency and level of inspection prescribed in the established criteria. Under Metric 7, the reviewer will ensure that any in-depth or special inspections required for a particular tunnel are deemed appropriate given the unique attributes of that tunnel.

Criteria:

General guidance should be provided by the PM to establish what types of features, circumstances, condition, or damage would create a need for damage, in-depth or special inspections.

Population:

The population for Int-AL are tunnels that have had a Damage, In-Depth or Special inspection(s) performed since the most recent NTI submission, according to the NTI data.

Compliance levels:

For a program to be considered substantially compliant any noted deficiencies must be minor without compromising the overall safety of the tunnel. When determining if a deficiency is minor consider the number of inspections of each type performed and the effect the missing information has on those inspections.

Any of the tunnels sampled may have more than one of these inspections performed. The reviewer will ensure that all inspections performed confirm to the established criteria. Each inspection, not each tunnel, is to be considered when evaluating this metric.

The metric is NC if no documented criteria exist.

Assessment levels:

Also for the Int-AL, obtain and review the criteria used by the State, and to the extent possible generate a list of tunnels meeting that criteria. Ensure that all tunnels are coded for the interval (if applicable) identified in the policy. The ability to generate a list may be limited to querying any NTI items that may be included in their criteria, which may not capture every aspect of the State's criteria. Alternatively, ask the State to generate the list, and clearly identify the criteria used to develop that list.

Metric #6: Inspection procedures – Quality Inspections

NTIS Reference: 23 CFR 650.513 (a), (b), & (h) Inspection procedures – Quality inspections

Criteria

- Tunnels are inspected in accordance with the TOMIE Manual and with tunnel-specific and specialized procedures, as evidenced by direct observation and/or accuracy of inspection findings, and measured by the following criteria:
- Defects and deficiencies are properly identified and recorded;
- Element coding is consistent with deficiency documentation;
- Inspection documentation and observations indicate procedures were followed.
- A qualified team leader is at the tunnel at all times during each initial, routine, and in-depth inspection.
- Tunnel inspection documentation is prepared as described in the TOMIE Manual.

Population

Tunnels in the State not yet reviewed since the most recent inspections.

Compliance Levels

Compliance (C): All of the following must be met for C:

- All tunnels were inspected in accordance with the TOMIE Manual, and with tunnel-specific and specialized procedures, as evidenced by accurate recorded deficiencies and element coding for 95% of all tunnel components, and by direct observation where applicable.
- Inspection documentation and observations indicate procedures were followed.
- A qualified team leader was on site for all initial, routine, and in-depth inspections during all phases.
- All tunnel inspection findings were documented consistent with the TOMIE Manual.

Substantial Compliance (SC): All of the following must be met for SC:

- All tunnels were inspected in accordance with the TOMIE Manual, as evidenced by accurate recorded deficiencies and element coding for at least 85% of structural, mechanical, electrical, civil, signage, and fire/safety system components; and by direct observation where applicable.
- Inspection documentation and observations indicate procedures were followed.
- A qualified team leader was on site for all initial, routine, and in-depth inspections during all phases.

[ToC](#)

- Inspection findings were documented in accordance with the TOMIE Manual, with minor or isolated deficiencies in the documentation.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Randomly sample the list of tunnels inspected using Intermediate sampling criteria; review the inspection reports of 25% of the tunnels sampled for accurate recorded deficiencies and element coding.
- Perform field reviews of the tunnels selected for inspection report review, comparing inspection reports with actual tunnel conditions.
- Compare inspection reports to documented procedures to identify any evidence that procedures were not followed.
- Review records and reports of reviewed tunnels to verify a qualified team leader was present at each applicable inspection.
- Assess based on previous review results and the reviewer's knowledge and awareness of State's inspection practices, tunnel operations, personnel, and testing logs.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample using Intermediate sampling criteria from the list of tunnels inspected, and review the inspection reports from the entire sample for accurate recorded deficiencies and element coding.
- Perform field reviews of 50% of the tunnels sampled for inspection report reviews, comparing inspection reports with actual tunnel conditions.
- Observe at least one ongoing inspection to observe inspection practices and procedures, to verify a qualified team leader was on site for all phases of initial, routine, and in-depth inspections.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #6: Commentary

General:

The purpose of this metric is to ensure that quality inspections were completed, and documented procedures were followed, yielding accurate findings, a team leader was on site during inspections, and inspection findings were properly documented. The expectation and assumption is that quality inspections are the result of following procedures and practices described in the TOMIE, by an inspection team led by a team leader.

The intent is for Metric 6 to be reviewed in tandem with, and at the same assessment level as Metric 7 and 14; refer to specific language in Metric 7 for how to review these metrics.

Criteria:

For the criteria ‘Tunnel inspection documentation is prepared as described in the TOMIE Manual’, judgement must be used to determine if the documentation is in the format and describes findings per the TOMIE Manual, to the extent necessary to convey the significant findings and other aspects of the inspection. This requires the DBE to develop familiarity with the TOMIE Manual.

Population:

The intent is for the tunnels required for field review to be systematically selected from the random sample of the available population, and with consideration of any Intermediate level reviews of other metrics, so that the field reviews will support the file reviews. For example, if Metric 13 – Critical Findings, is being reviewed at the Int-AL, select at least one tunnel with critical findings, if available, to include in the field review for Metric 6.

The available population means those not reviewed in the prior year or since a tunnel has last received an inspection. If the total tunnel population is large enough, select tunnels that have not been field-reviewed in the current 5-year review cycle, and have been recently inspected.

Compliance levels:

In assessing this metric, if the documented findings are accurate, documentation and photos support the findings and established inspection procedures, and there is no evidence that established procedures were not followed, then it should be assumed that procedures were appropriately followed.

The data points for this metric are the main components of the tunnel: Structural, Civil, Electrical, Mechanical, Fire/Life Safety and Signage (where applicable). For determining

compliance for each component, ‘accurate recorded deficiencies and element coding’ is according to the following criteria:

- All elements and areas reviewed with portions in Condition State (CS) 3 or 4 having clear descriptions of verified deficiencies including location and size.
- All element quantities in CS3 or 4 within 25% of verified quantities, except for small quantities less than 25% which must have at least some quantity listed in the proper CS.
- All elements and areas reviewed and determined to have had some quantity in CS3 or 4, should have that quantity identified in the proper CS within the tolerances described in the first 2 bullets.

Judgement must be used to determine field conditions that were likely present at the time of the most recent inspection, including if changes were likely to have occurred in the time since the last inspection and the current review. The reviewer determines to the degree possible if any quantities in CS1 or 2 should have actually been identified as being in CS3 or 4, in addition to verifying quantities already identified in CS3 or 4.

Example:

Main Components	Tunnels		
	Tunnel 1	Tunnel 2	Tunnel 3
Structural	<i>Did NOT meet Criteria</i>	<i>Met Criteria</i>	<i>Met Criteria</i>
Civil	<i>Met Criteria</i>	<i>Met Criteria</i>	<i>Met Criteria</i>
Electrical	<i>Met Criteria</i>	<i>Did NOT meet Criteria</i>	<i>N/A</i>
Mechanical	<i>Met Criteria</i>	<i>Met Criteria</i>	<i>N/A</i>
Fire / Life Safety	<i>Met Criteria</i>	<i>Did NOT meet Criteria</i>	<i>N/A</i>
Signage	<i>Met Criteria</i>	<i>Met Criteria</i>	<i>Met Criteria</i>

For these 3 tunnels, there were 15 components, because Tunnel 3 does not have electrical, mechanical or fire/life safety elements. During the example review 12 of 15 components met the criteria. This represents 80% meeting the criteria, which would be Noncompliant.

Review inspection report/ documentation to note team leader presence.

- Team leader’s identification should be clearly listed on the report and reported to the NTL.
- If the tunnel is complex, the team leader must meet additional requirements, if any is required by the State, to be a team leader for complex tunnels.

The team leader should be at the tunnel at all times.

- Team leader should be actively involved in the inspection.
- If a team leader is not on site for every initial, routine, and in-depth inspection, the State is considered in non-compliance for this metric.

Assessment levels:

The intent of field reviews is to confirm, to the extent practical, that inspection and other procedures reviewed in other metrics are being followed in the field, and that deficiencies were accurately documented and data was accurately collected. The review is primarily done via inspection report review, but is supplemented by field review. The field notes, photos, and observed field conditions should be compared and checked for reasonableness.

At the Minimum AL, sample the total population at LOC 80%/MOA 15% level and select the top 25% (from the randomly assigned numbers) for the inspection reports to be reviewed. All of the tunnels selected from the inspection report review will be the field reviewed tunnels, which is to supplement the inspection report review findings. These samples can be geographically partitioned or removed due to access concerns, though at least one complex tunnel should be reviewed if possible and in the sample.

The extent of the field review should be based on the inspection report review; if there are questions or elements with uncertainty from reviewing the report try to access as many of these areas of the tunnel as possible, especially areas with CS3 and/or CS4 condition states.

While the following of procedures often cannot be verified directly, the reviewer should then look for indications that procedures may not have been followed. This can sometimes be apparent by lack of photos or specific descriptions that should be present for a hands-on inspection, for example.

Interview of inspection personnel or the PM can sometimes be helpful to verify such indications.

For the Intermediate level, the intent is obtain the same sample as the Min-AL, but then to review all of the inspection reports in the sample. The field reviews will be performed on 50% of the inspection reports reviewed. Refer to the table below:

Sample Tunnel Inspection Report Sample and Field Review Selection:

Population	Min-AI		Int-AI	
	Inspection Report Reviews	Field Reviews	Inspection Report Reviews	Field Reviews
<i>1</i>	1	1	1	1
<i>2</i>	1	1	2	1
<i>3</i>	1	1	3	2
<i>4</i>	1	1	4	2
<i>5</i>	1	1	5	3
<i>7</i>	2	2	6	3
<i>9</i>	2	2	7	4
<i>11</i>	2	2	8	4
<i>14</i>	2	2	9	5
<i>17</i>	3	3	10	5
<i>21</i>	3	3	11	6
<i>27</i>	3	3	12	6
<i>34</i>	3	3	13	7
<i>43</i>	4	4	14	7
<i>57</i>	4	4	15	8
<i>80</i>	4	4	16	8

For small inventories, it is possible to have no field reviews during an annual assessment, due to no tunnels having been re-inspected since the previous review. Tunnels should be selected in randomized order from a random sample at the 80/15 level of all tunnels meeting the Population criteria. Examples are shown below:

Min-AL:

In a State with 10 tunnels, the sample size at the Int-AL Tier 1 (80/15 level) level is 7 tunnels. Run a random sample to obtain the randomized list of available tunnels in the State. For the Min-AL select the first 2 tunnels for inspection report review and field review that:

- satisfies your geographic criteria,
- has sufficient access in order to verify field conditions
- has had a recent inspection (preferably in the review year), and
- includes at least 1 complex tunnel if available and not recently reviewed.

In the following review year, remove the 2 reviewed tunnels from the available population before running that random sample.

Int-AL:

In a State with 18 tunnels, the sample size at the Int-AL Tier 1 (80/15 level) level is 10 tunnels. Run a random sample to obtain the randomized list of available tunnels in the State. For Int-AL select the first 10 tunnels on the list for inspection report review. Select the first 5 tunnels from the list for the field review that:

- satisfies your geographic criteria,
- has sufficient access in order to verify field conditions
- has had a recent inspection (preferably in the review year), and
- includes at least 1 complex tunnel if available and not reviewed since the most recent inspection.

The other 5 tunnels for inspection report review only without field review should not be filtered for geography or access concerns, but rather should be from the Statewide sample.

In some States, all safety inspections are completed in one year of the two year cycle. In this case, if the only effective field reviews can only be done by participating in and observing an actual inspection, then it may be acceptable to combine all field reviews required for two years into one year, but this should be approved by your BSE prior to the review. See the next paragraph for recommended practice to avoid combining field reviews into one year. However, in any case each year, the inspection reports for the sampled tunnels must still be reviewed, with report narrative, photos, element condition coding, etc. compared to each other to determine inspection quality to the extent possible. In other words, a Min-AL review is still to be completed each year that an Int-AL is not.

It is recommended to complete a field review each year, and not recommended to combine field reviews from two years into one. To do this, investigate ways to complete a safe field review each year, such as during a tunnel maintenance operation where traffic control would already exist, or during a State QA operation. so that a recent inspection report is compared to actual findings. When observing completing the review during live inspections, then the available reports/findings are typically from the previous cycle and thus two years old. It is more desirable to mix review during live inspections with review a few months after inspections when a new report is available, if possible to do so safely.

A large and/or complex tunnel can sometimes take several days to complete a safety inspection. However, the expectation is that a field review of a complex tunnel can be limited to approximately 8 hours, so it is sufficient to observe only a representative portion of the tunnel to satisfy the requirement of observing an inspection.

A field review for large tunnels could be similar to a field review for larger/complex bridges. It is unlikely that the reviewer will be able to access all areas of a tunnel in a reasonable amount of time. The reviewer should identify at least some of the most critical areas of the tunnel based on the review of the inspection report and coordination with the State. Examples of portions of the tunnel to prioritize during the field review:

- An area of the tunnel with elements of CS3 or CS4, or with significant quantity of CS3 or CS4.
- Area(s) of the tunnel where the inspection report is not clear about the quantity or severity of the deficiencies.
- The portion of a tunnel which contains the mechanical and electrical equipment, if it appears that the testing and/or tunnel specific procedures were not followed

However, review time may sometimes need to be split among different days and/or shifts as necessary to coordinate access requirements.

Comparing the team leader designated on the inspection report to a registry of certified team leaders provided by the program manager will provide evidence that a qualified team leader was present, and will satisfy the intent of this metric. If you become aware that there is a problem with the qualifications of a team leader(s), this should be assessed under Metric 3 and explained accordingly in the documentation of findings for that metric.

If review of a geographic subset is practical, follow guidance under NBIP Metric 12 commentary.

Metric #7: Inspection procedures – Tunnel-Specific Inspection Procedures

NTIS Reference: 23 CFR 650.513 (a), (c), (d) & (e) Inspection procedures – Tunnel-Specific Inspection Procedures

Criteria

- Prepare and document tunnel-specific inspection procedures for each tunnel inspected.
- For complex tunnels, identify specialized inspection procedures.
- For complex tunnels, define critical systems and procedures for direct observation of critical system checks.

Population

All tunnels in the State inspected since January 1 of the previous review year.

Compliance Levels

Compliance (C): All of the following must be met for C:

- Each tunnel has documented tunnel-specific inspection procedures.
- Each complex tunnel has documented specialized inspection procedures.
- Each complex tunnel has critical systems defined, and procedures are established and documented for direct observations of critical system checks.
- The procedures developed for each tunnel are appropriate.

Substantial Compliance (SC): All of the following must be met for SC:

- Each tunnel has documented tunnel-specific inspection procedures, but the documentation for one or more tunnels has minor and isolated omissions or deficiencies without adverse impact on the overall effectiveness of the procedures.
- Each complex tunnel has documented specialized inspection procedures, but the documentation for one or more tunnels has minor and isolated omissions or deficiencies without adverse impact on the overall effectiveness of the procedures.
- Each complex tunnel has critical systems defined, and procedures are established and documented for direct observations of critical system checks, but the documentation for one or more tunnels has minor and isolated omissions or deficiencies without adverse impact on the overall effectiveness of the procedures.
- One or more tunnels have isolated instances where the procedures are not entirely appropriate for that tunnel, without compromising the overall results of the inspection.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Review documented procedures for all tunnels reviewed under Metric 6, and through review of inspection reports and field reviews, determine to the extent possible if procedures are being followed and the procedures are appropriate for each tunnel.
- Assess based on previous review results and the reviewer's knowledge and awareness of State's inspection practices.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Observe at least one ongoing inspection to observe inspection procedures.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #7: Commentary

General:

The purpose of this metric is to determine if tunnel-specific inspection procedures have been established and documented for each tunnel. The adequacy of the procedures should also be evaluated to ensure tunnel owners are maintaining good practices. The intent is for Metric 7 to be reviewed in tandem with, and at the same assessment level as Metric 6.

Criteria:

Inspection procedures should be established in accordance with the TOMIE Manual and for the specific needs and requirements of the tunnel being inspected. These procedures should be developed to ensure safety of the traveling public and inspection personnel, and to ensure a quality inspection can be performed.

Examples of tunnel specific procedures include identification of:

- Interval of Non-destructive Testing (NDT) or In-Depth inspections
- Tunnel elements, especially for Agency Defined Elements

Examples of specialized inspection procedures:

- Level of effort required to inspect certain unique tunnel components
- Certain details about accessing portions of the tunnel and/or tunnel equipment

Examples of critical systems and direct observation:

- Interval of independent functional system testing (should include who is to perform these tests).
- Interval of TL observation of functional system testing

As part of the inspection procedures, coordination with other individuals associated with the tunnel, such as maintenance or operations personnel, may be required. If the inspection includes analyzing functional systems, coordination with the operation and maintenance personnel within the tunnel should be discussed as part of the inspection plan, and the plan should list the key points of contact.

As part of the review of inspection procedures, the review team should consult the previous inspection report, and maintenance and operations logs. This information can reveal items not readily available or feasible to replicate during the review. However, the NTIS inspectors should observe some actual testing, and document it in the inspection report.

Tunnel-specific inspection procedures may be grouped with any identical procedures for other tunnels, if any, and contained in a general inspection procedure manual that is readily accessible to inspectors but not necessarily contained in each tunnel file. However, any unique, tunnel-specific procedures must be documented in the tunnel file.

In most situations, it is not acceptable for procedures used in a previous inspection as noted in an inspection report to be considered the official documented procedures, unless it is clarified in the report and understood by team leaders that these procedures must be repeated in every inspection report. Similarly, it is not acceptable to only refer to criteria or procedures outlined in a consultant contract; such procedures must also be documented in a known centralized location and is referenced by the inspectors.

Documented inspection procedures are those procedures required for specific inspection types, especially of more complex structures. These inspections must be planned and prepared for, identifying and accounting for each significant component, needed access, inspection equipment, risk factors present, inspection methods and frequencies, and the required qualifications of inspecting personnel.

Population: Since all tunnels require tunnel-specific procedures, all tunnels are included in the population. The intent is for the tunnels required for field review at the Minimum level for Metric 6 to be included at the Minimum level for Metric 7 as well. Complete the Int-AL review for Metrics 6 and 7 in the same year to prevent duplication of effort.

As in Metric 6, do not include tunnels that were recently reviewed and not yet re-inspected. If the total tunnel population is large enough, it is recommended to select tunnels that have not been reviewed in the current 5-year review cycle.

Compliance Levels:

Refer to the TOMIE Manual Section 4-10 for guidance on what should be documented when determining the appropriateness of the inspection procedures.

Assessment levels:

It is intended that this metric be reviewed at the same assessment level as Metrics 6 & 14.

Metric #8: Inspection procedures – Functional Systems Testing

NTIS Reference: 23 CFR 650.513 (d) Inspection procedures – Functional systems testing

Criteria

- Establish requirements for testing of each functional system.
- Ensure testing is performed according to the established requirements.
- Ensure the results of the testing performed is properly documented.

Population

Tunnels with functional systems.

Compliance Levels

Compliance (C): All of the following must be met for C:

- Testing requirements are established for each functional system.
- Each functional system is tested in accordance with the established requirements .
- All testing is properly documented.
- The requirements developed for each tunnel are appropriate.

Substantial Compliance (SC): All of the following must be met for SC:

- Testing requirements are established for each functional system.
- Each functional system is tested, however the testing for one or more tunnels has minor and isolated omissions or deficiencies which do not adversely impact the NTIS inspector's ability to determine the condition of each functional system.
- All testing was documented; isolated deficiencies in the documentation exist but do not adversely affect the reviewer's ability to confirm testing was performed in accordance with established requirements.
- One or more tunnels have isolated instances where the requirements are not entirely appropriate for that tunnel, without compromising the overall results of the testing.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Not Applicable (NA): The tunnels in the inventory do not have functional systems.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Review documented requirements for all tunnels reviewed under Metric 6, and

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through review of inspection reports, determine to the extent possible if the required testing is being performed and documented, and if the requirements are appropriate for each tunnel.

- Assess based on previous review results and the reviewer's knowledge and awareness of State's inspection practices, tunnels operations, personnel, and testing logs.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample the list of tunnels with function systems to review the documented functional system testing requirements are established in accordance with the TOMIE and/or manufacturers recommendations.
- Review testing documentation of sampled tunnels for completion and timeliness in accordance with established requirements.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #8: Commentary

General:

The purpose of this metric is to verify that testing of the functional system(s) are occurring based on the testing requirements established by the tunnel owner. This required testing should include direct observation of the system components while under operation, instead of solely relying on electronic readouts, for example. The testing will typically be performed by tunnel operations staff, not the NTIS inspectors, though it is recommended that inspectors observe some testing.

The PM, or designee, should ensure that the testing is being performed in accordance with the established requirements. It is a recommended practice to have the NTIS inspectors make note in the inspection reports of what testing results were available during each inspection.

The NTIS inspectors should also directly observe some of the testing operations at certain intervals. These intervals will be established under the tunnel specific inspection procedures which are assessed under Metric 7. If the inspection procedures are missing or incomplete these are compliance issues with Metric 7. Refer to the TOMIE manual (page 4-7 to 4-12)

Metric 8 is assessing the actual testing that is required in the criteria, and the data that is logged. The actual testing logs may not be included with the inspection file though located with the operation center of the tunnel.

Criteria:

For each functional system and sub-elements within the system, testing procedures should be established based on guidance in the TOMIE, manufacturer's recommendations, tunnel staff, or the inspection team. These tests occur at prescribed intervals, which can be daily, weekly, monthly, annually, etc. A log should be maintained detailing when the test occurred, showing the test results, and who performed the test.

Population:

Tunnels with functional systems, thereby requiring testing of the functional systems during the review year.

Compliance Levels:

NA

Assessment levels:

This metric is assessed similarly to the assessment of a quality inspection under Metric 6. The functional system testing requirements and the results of all test performed should be clearly documented. The testing results should be available to the NTIS inspectors to supplement their field observations.

The reviewer is to ensure that testing is being performed in accordance with the established requirements, as noted in the inspection report. It should not be necessary for the reviewer to review testing logs etc. The reviewer should interview the PM or tunnel operations staff as necessary to help determine if testing is being completed per requirements. If the results of the testing are not clearly incorporated into the inspection report, the reviewer could then choose to compare the testing logs with the tunnel requirements, based on the assessment level and/or knowledge of the reviewer. This may ensure that the testing is being performed, but the lack of documentation in the inspection report would be a compliance issue.

It is recommended that the NTIS inspectors directly observe at least some of the testing on a regular interval. This interval could vary from system to system based on the complexity and risk associated with each system. These intervals should be identified under the tunnel specific inspection procedures assessed under Metric 7. These direct observations will assist the inspectors when using the testing data to establish the condition of the system in between the NTIS inspections. For example:

If a fan motor is in good physical and working condition during the current inspection and this appears similar to the last inspection, the testing data may be the only way to determine a deficiency. The testing log for this fan motor may indicate that the motor operates well under typical conditions, but cannot meet the operation level necessary for an emergency situation. These results should be clearly recorded in the logs, and the NTIS inspector should use this information when evaluating the fan motor's capability to perform reliably under the required conditions.

The criteria that are established should be reviewed to ensure adequate coverage of all functional systems. If a reviewer is unsure about the adequacy of the established procedures, especially new or revised procedures, the reviewer may:

- Request the basis of the requirements from the tunnel owner
- Request an independent review of the requirements by a PE in the proper discipline
- Request assistance from an Subject Matter Expert (discuss this option with the Office of Bridges and Structures)

In an effort to become more familiar with the tunnels and testing, the reviewer could attempt to observe the testing being performed, especially testing of the critical systems. Similar to the NTIS inspector observing the testing, the reviewer will understand the results and how the testing may indicate an issue that day to day observations may not. Observation could depend on assessment level and frequency of testing (may be easier to evaluate daily testing, whereas monthly or annual testing could be difficult to observe).

The maintenance and testing logs could be reviewed to ensure various functional systems are tested at their prescribed cycles. The testing logs should contain date performed, if the test was successful/completed, and if any issues were encountered during the tests.

Metric #9: Inspection procedures – Load Rating

NTIS Reference: 23 CFR 650.509 (c) and 650.513 (g) – Rating of safe vehicular load-carrying capacity

Criteria

- Tunnels are rated for their safe vehicular load-carrying capacity in accordance with the *AASHTO Manual for Bridge Evaluation (MBE)* for all State legal vehicles and routine permit loads
- The load rating is conducted no later than three months after the completion of the latest inspection, if a change in condition which warrants re-rating is identified.
- Load ratings are performed by, or under the direct supervision of, a registered Professional Engineer (PE).

Population

All tunnels in the State subject to vehicular loading.

Compliance Levels

Compliance (C): All of the following must be met for C:

- All tunnels requiring a load rating have been load rated in accordance with the MBE.
- Each load rating was conducted no later than three months after completion of the latest inspection, if a change in condition which warrants re-rating was identified.
- Load ratings were performed by, or under the direct supervision of, a registered PE.

Substantial Compliance (SC): All of the following must be met for SC:

- Load ratings may have minor or isolated documentation deficiencies, but these do not adversely affect the accuracy of the rating.
- Load ratings have been determined for all applicable tunnels within six months after the completion of the latest inspection, if a change in condition which warrants re-rating was identified.
- Load ratings were performed by, or under the direct supervision of, a registered PE.

Non-Compliance (NC): One or more SC criteria not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Not Applicable (NA): There are no tunnels that require a load rating.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results and the reviewer's knowledge and awareness of State load rating practices.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample using intermediate sampling criteria to verify tunnels have load rating calculations or that documented determinations exist, verifying all legal vehicles were considered, load ratings are consistent with current conditions, and the load rating assumptions and methodology used are appropriate per the MBE.
- Include site visits of some of the sampled tunnels in the field review for Metric 6 and 14.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #9: Commentary

General:

The purpose of this metric is to determine which tunnels require a load rating due to vehicular live loadings (trucks) within or above the tunnel, and that the load rating was calculated in a manner consistent with the AASHTO MBE, Second Edition with 2011, 2013, 2014, and 2015 Interims. The limitation to vehicular loadings is because they are the only vehicles that are subject to a legal load posting. The intent is only elements of a tunnel that carry live load will require a load rating, either within the tunnel bore or above the tunnel. A separate structural evaluation for other live loads (planes, trains, etc.), dead loads, hydraulic and other loads, can be required by the owner at any time, and should occur automatically if damage or deterioration with the potential to affect tunnel performance is detected through an inspection.

The current NTI is limited to only one data field for load rating, and this should be for the controlling member inside the tunnel. The State should keep a record of all load ratings of live loads on multiple floor systems of multi-level roadways, and on the tunnel roof/lining from roadways above.

Criteria:

The load rating of tunnels shall follow the provisions of the AASHTO MBE and the TOMIE Manual. In cases where AASHTO criteria are silent or do not apply, criteria should be agreed upon between the PM and engineer performing the evaluation, and a record of these decisions shall be documented in the tunnel file (TOMIE 5-4). It is recommended a qualified geotechnical engineer assist with the evaluation of soil-structure interaction between the tunnel liner, any adjacent elements, and the ground. Assumptions for the distribution of wheel load through earth fills must be consistent with the AASHTO MBE.

A change in condition which warrants re-rating is when the change results in reduction in structural capacity.

If calculations cannot be completed due to lack of information, load ratings for tunnels may be determined by engineering judgement in accordance with the AASHTO MBE.

Population:

All tunnels which have a structurally supported roadway system to carry vehicles and/ or those subjected to live load force effects from a roadway located above the tunnel, as described in Section 5-4 of the TOMIE Manual.

Compliance Levels:

For SC, minor or isolated documentation deficiencies include difficulty in following the calculations, missing a stamp or signature, valid but unclear assumptions, etc. Justification for assigned load ratings must be consistent with the specifications in the AASHTO MBE.

A load rating evaluation for changes in existing structural conditions must be completed within 3 months of the inspection in which the change was noted.

Assessment levels:

At the Int-AL, a random sample of tunnel files is selected for review. Verify the tunnels have load rating calculations or that documented determinations exist. The Int-AL involves not only ensuring these exist, but that the results are consistent with other tunnel information contained in the file and in the NTI. Additionally ensure the assumptions and methodology are consistent with the calculations and the load rating summary information, checking suitability of rating vehicles and software program used, etc. Load rating assumptions such as LRFR considerations for condition, significance of or changes to dead load, impact forces, and effectiveness of enforcement should be noted in the load rating file and verified for actual conditions.

Proper evaluation of the load rating file, and load rating policies and procedures, requires familiarity with current policies regarding assigned ratings (5 prerequisite conditions contained in the September 29, 2011 memo from the Office of Bridges and Structures), rating vehicles (including AASHTO SHVs), and other AASHTO MBE provisions. Assigning a rating after satisfying the 5 conditions is different than establishing a load rating through engineering judgment as prescribed in the AASHTO MBE. Engineering judgment is allowed by the MBE in certain circumstances, primarily when a tunnel is old with no plans and no way to assess the section properties. It is recommended to invite FHWA Resource Center or Headquarters load rating specialists when conducting an Int-AL review.

Metric #10: Inspection procedures – Post or Restrict

NTIS Reference: 23 CFR 650.513 (g) Inspection procedures – Post or restrict

Criteria

- Post or restrict the highways in or over the tunnel in accordance with the *AASHTO Manual for Bridge Evaluation (MBE)* or in accordance with State law, when the maximum unrestricted legal loads or State routine permit loads exceed that allowed under the operating rating or equivalent rating factor.
- Post within 30 days after completion of a valid load rating or notification of missing or improper signage following an inspection.

Population

All tunnels in the State requiring posting.

Compliance Levels

Compliance (C): The following must be met for C:

- All tunnels are properly posted or restricted as required in accordance with the *AASHTO Manual for Bridge Evaluation (MBE)* or in accordance with State law.
- All tunnels are posted within 30 days after completion of a valid load rating or notification of missing or improper signage following an inspection.

Substantial Compliance (SC): The following must be met for SC:

- All tunnels are properly posted or restricted as required, but signs may have minor damage or deficiencies not significantly reducing the effectiveness of the sign.
- All tunnels are properly posted or restricted as required within 30 days after completion of load rating or notification of missing or improper signage.

Non-Compliance (NC): SC criterion not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Not Applicable (NA): There are no tunnels that required posting or restrictions for loads.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results and the reviewer's knowledge and awareness of the agency's load posting practices.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Randomly sample tunnels using Intermediate criteria, and examine photos and documentation to verify the posting signs are in place and consistent with the load rating.
- Include site visits of some posted tunnels in the sample of field review tunnels for Metric 6 to verify that the posting signs exist and are appropriate for the current load rating and posting recommendations and that NTI load posting items are correctly coded.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #10: Commentary

General:

The purpose of this metric is to determine if tunnels are properly posted or restricted for vehicular loads when required. Other restrictions, for example vehicular size or hazardous materials, are not assessed under this Metric.

Criteria:

Signs should be consistent with those approved in the Manual for Uniform Traffic Control Devices (MUTCD).

Population:

Tunnel Load Posting Status (SNTI Item L.4) coded B or P.

Compliance Levels:

It is not possible to eliminate vandalism or impact damage; however, the owner should develop a process to quickly replace or repair such signs once they are notified or discover the problem. For example, some consider a missing posting sign a critical finding and have established an allowable timeframe to reinstall the sign. Similarly, once determined that a tunnel must be restricted for loads, the new signs must be installed promptly. If the owner is able to install the missing, damaged, or new posting signs within the agreed upon timeframe, the deficiency is considered resolved, and a determination of C is warranted. If the owner has no established timeframe, but still promptly resolves the issue, a determination of SC is warranted. If the owner does not timely address the issue of posting deficiencies, this should be considered NC.

When the State has a policy for a more restrictive posting timeline less than 30 days, it is still considered compliance if the 30-day timeline is met even if beyond the State's more restrictive timeline.

The State must maintain posting documentation (date of posting, pictures, history of posting, etc.) as part of the tunnel record.

Assessment levels:

None.

Metric #11: Inspection procedures – Tunnel Files

NTIS Reference: 23 CFR 650.513 (h) – Prepare tunnel files

Criteria

- Tunnel files are prepared and maintained with relevant information as described in the NTIS and TOMIE Manual.

Population

All tunnels in the entire State that are open to traffic..

Compliance Levels

Compliance (C): All of the following must be met for C:

- All tunnels have files.
- The tunnels files have all the required relevant information.

Substantial Compliance (SC): All of the following must be met for SC:

- All tunnels have files.
- The tunnel files have isolated deficiencies, but do not adversely affect the ability to assess tunnel condition.

Non-Compliance (NC): One or more SC criteria not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results and the reviewer’s knowledge and awareness of State’s practices.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Sample tunnels to verify that files and required file components exist. If some components are only referenced, verify the components exist in the referenced location(s) and are readily available.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #11: Commentary

General:

The purpose of this metric is to determine if each tunnel has a tunnel file and that it contains the appropriate information and is up to date. Refer to the regulation and TOMIE manual for pages 4-4 to 4-5.

Criteria:

Each tunnel shall have a tunnel file. The relevant file information may be located in more than one location, but the location should be referenced and easily accessible. The following components are required to be included in the file, as applicable:

- Any special qualifications necessary for team leader(s) of the inspection team.
- Tunnel Inventory Data
 - Location
 - Tunnel and roadway geometrics
- Inspection reports (current and previous)
 - Team leader(s) responsible in whole or in part for the inspection
 - Inspection findings including critical findings
 - Conditions of each structural and functional system component
- Relevant maintenance, repair, and rehabilitation records to allow assessment of current tunnel condition.
- Tunnel Specific Inspection Procedures (*if the inspection procedures are missing, then Metric 7 Tunnel Inspection Procedures should be assessed as noncompliant and the reviewer should determine compliance for Metric 11 for the remaining files*)
 - Tunnel systems information
 - Tunnel testing procedures
- Reference to functional system testing logs
- Load rating calculations or input files with a summary of results
- Posted speed
- Photos
- Diagrams (sketches, cross sections, plan and elevation layout describing the different lining systems and tunnel types; or as-built plans.)

Compliance Levels:

If there are minor and/or isolated deficiencies with any components, the metric will be considered substantial compliance.

Assessment levels:

It is expected that most of the components of a tunnel file will be in the same location; however, if there are items which are not included in the tunnel file, the file should reference where the information is located. The tunnel file can be electronic or hard-copy or a combination of both as determined by the State's policies. Tunnel files, or parts thereof, might be located in district or region offices for agencies that have a de-centralized organizational structure. Reviewing these files may be done electronically, by requesting mailed copies, or by visiting the remote offices.

Metric #12: Inspection procedures – QC/QA

NTIS Reference: 23 CFR 650.513 (i) – QC/QA

Criteria

- Systematic quality control (QC) and quality assurance (QA) procedures are used to maintain a high degree of accuracy and consistency in the inspection program.
- QC/QA procedures include periodic field review of inspection teams, data quality checks, and independent review of inspection reports and computations.

Population

None.

Compliance Levels

Compliance (C): All of the following must be met for C:

- QC/QA procedures are established, documented, implemented, and effective.
- Procedures include periodic field review of inspection teams, data quality checks, and independent review of inspection reports, computations, and NTI data.

Substantial Compliance (SC): All of the following must be met for SC:

- QC/QA procedures are established and implemented, but minor aspects of the procedures are not documented or are not being performed, without significantly affecting the overall effectiveness of the QC/QA program.
- Procedures include periodic field review of inspection teams, data quality checks, and independent review of inspection reports, computations, and NTI data.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Assess based on previous review results and the reviewer's knowledge and awareness of QC/QA procedures.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Review QC/QA procedures in order to verify key components of the QC/QA procedures meet the requirements of the NTIS.
- Verify that the QC/QA procedures are being followed.
- Review any documentation of QA reviews for number of reviews, types of reviews and findings; verify that any measurable review requirements have been achieved.
- Determine whether the procedure is maintaining a high degree of accuracy and consistency by considering follow-up actions to the QA findings and the results of the other metrics, and through interviews of some personnel responsible for QC and/or QA reviews.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #12: Commentary

General:

This metric evaluates if the QC/QA process meets the intent of the NTIS, and verifies the reviews are performed and the results are used to maintain a high degree of accuracy and consistency in the inspection program. The reviewer verifies that QC/QA procedures include periodic field review of inspection teams, data quality checks, and independent review of inspection reports and computations.

Criteria:

The State should establish a procedure for QC and QA that checks periodic field review of inspection team, data quality checks, and independent review of inspection reports and computations.

Population:

A population was not defined for this metric as there are many different methods and requirements in which agencies perform QC/QA of inspections, load ratings, NTI data and other computations.

However, if the established QC/QA process lends itself to random sampling, the reviewer may use the NTIP assessment sampling criteria to review the various aspects of QC/QA process.

Compliance Levels:

Key components include periodic field review of inspection teams, data quality checks, and independent review of inspection reports, NTI data, and computations.

When evaluating this metric, consider if repetitive errors are found during the review of other metrics, as this may be an indication the QC/QA procedures are ineffective.

If minor aspects of the QC or QA process are not always being performed, or documentation is missing, but the overall effectiveness is not impacted, this would be considered substantial compliance.

Assessment levels:

The Min-AL is based upon the reviewer's knowledge and awareness the agencies QC/QA program and if the procedures are being followed.

At the Int-AL, examine documented procedures for performing QC/QA of inspections, NTI data, and calculations to verify compliance with the NTIS. Verify that procedures address the

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QC/QA of consultants and/or other agencies that are performing inspections or calculations. A process should be in place to document and confirm that QC/QA procedures are being followed. Verify the information from the QC/QA process is used to maintain a high degree of accuracy and consistency in the inspection program.

For example, if the review process finds a common coding error on several QA reviews, verify the corrective action is disseminated (quarterly meetings, refresher training, memos, etc.) to all inspection teams. Interview some personnel responsible for QC and/or QA to determine their level of understanding of the QC/QA process and if it is effective at maintaining a high degree of accuracy and consistency in the inspection program. At a minimum, one person should be interviewed, but this number can vary based upon the size of the program.

The reviewer should review documentation and interview if necessary to verify that the QC/QA process set up by the State is actually being followed. Documentation should show if goals such as independent field review of a certain percentage of inspection teams, for example, are achieved.

Measurable review requirements means for aspects of the QC/QA process that are data-driven or otherwise measurable, then the reviewer reviews documentation to verify that process is being implemented and results are achieved.

Metric #13: Inspection procedures – Critical Findings

NTIS Reference: 23 CFR 650.513 (j) – Follow-up on critical findings

Criteria

- A procedure is established to assure that critical findings meeting the FHWA definition in 650.505 are addressed in a timely manner.
- FHWA is notified within 24 hours of any critical finding and the activities taken, underway, or planned to resolve or monitor the critical finding.
- FHWA is updated regularly or as requested on the status of each critical finding until resolved.
- An annual report detailing the current status and resolutions of all critical findings is submitted to FHWA.

Population

All tunnels identified as having an unresolved active critical finding at the time of the last assessment, and any identified since the last assessment.

Compliance Levels

Compliance (C): All of the following must be met for C:

- A documented procedure has been established and implemented to assure critical findings are addressed in a timely manner.
- FHWA is notified of all critical findings within 24 hours.
- The status of all critical findings is monitored and updates provided to FHWA as required.
- An annual report detailing all critical findings is submitted to FHWA.

Substantial Compliance (SC): All of the following must be met for SC:

- A documented procedure has been established and implemented to assure critical findings are addressed; there are isolated instances where the immediate safety concern is addressed in a timely manner, but the final resolution is not completed in a timely manner.
- FHWA is notified of all critical findings within 24 hours when operations are affected, and there are isolated instances where FHWA is not notified where operations are not affected.
- The period for FHWA updates of actions taken is established; there are isolated instances where FHWA has not been updated of a critical finding status.
- All critical findings are addressed in accordance with the procedure; isolated instances exist where documentation of actions taken is incomplete.
- Annual report detailing all critical findings and updates is submitted to FHWA.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Not Applicable (NA): No tunnels were documented as having a critical finding.

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Monitor the periodic notifications to confirm that all critical findings have been addressed.
- Assess based on previous review results and the reviewer's knowledge and awareness of the State's process for addressing critical findings and that the process is being followed.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Verify that the established critical finding procedure meets the requirements of the NTIS.
- Randomly sample tunnels using Int-AL criteria and review documentation to ensure actions taken and documentation were in accordance with the established procedure.
- Include site visits of some sample tunnels in the field review sample for Metric 6.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – conduct in accordance with national direction and guidelines.

Metric #13: Commentary

General:

This metric evaluates if the critical finding process meets the intent of the NTIS, verifies that critical findings are identified, reported to FHWA within 24 hours, and are resolved in an appropriate period of time with an annual report submitted to FHWA.

Criteria:

Each State is required to establish a policy for critical findings. As part of that policy, the State must define critical findings if beyond the FHWA definition and coordinate with FHWA on those definitions. However, the reviewer should only be concerned with those meeting the FHWA definition for the purpose of this metric, which is: A structural or safety related deficiency that requires immediate follow-up inspection or action. It should have requirements on when to notify FHWA, what information will be shared with FHWA, and details on an annual report summarizing critical findings identified, actions taken and resolution for critical findings. The State must notify FHWA when a critical finding has occurred, within 24 hours of the determination.

Population:

The tunnels identified for this population should be taken from the periodic reporting of critical findings submitted to FHWA.

Compliance Levels:

Timely is defined for this metric as the timeframe established in the State's procedure for addressing critical findings.

The critical finding procedure must identify the permissible timeframe from when a critical finding is identified to when the structural or safety concern is addressed. If the procedure does not identify timeframes for addressing critical findings, this should be considered substantial compliance.

At the substantial compliance level there may be isolated instances where the critical finding has been properly addressed but the actions taken are not documented. This may include such things as missing documentation for completed work or failure to close out the critical finding after work is completed.

FHWA must be notified of all critical findings within 24 hours. If the reviewer becomes aware of an isolated instance where a critical finding was not reported to them within 24 hours and the critical finding did not impact the operation of the tunnel, this should be considered substantial

compliance. It is not expected that the reviewer investigate for possible omissions, unless performing an in-depth AL. At the in-depth AL, use news sources, emergency relief lists, local knowledge, discussions with an agency, etc., to determine if the list of critical findings is complete, or if other incidents should have been reported.

If the reviewer becomes aware of an instance where a critical finding was not reported to them within 24 hours and the critical finding does impact the operation of the tunnel, this should be considered noncompliance.

Annually, a report listing critical findings that occurred or critical findings in which actions from previous years are still underway should be submitted to the FHWA. The report should summarize the critical finding, when and where it occurred, what caused the critical finding, actions taken to address the critical finding, date actions were completed, and if the critical finding process is closed or open. It is suggested that this report be submitted no later than January 31st, updating critical findings for the previous calendar year. A different submittal date is acceptable, but should be agreed between the reviewer and the organization responsible for tunnel inspections. The established date should stay the same.

Assessment levels:

Select at least one tunnel with critical findings, if available, to include in the field review for Metric 6.

At the Min-AL, monitor the notifications from the State to verify that critical findings are addressed. This should typically be done throughout the year when the notification is received. If it becomes apparent that a critical finding is not being addressed in timely manner, work to address the critical finding and consider reviewing this metric at the Int-AL.

When performing the review for this metric, consider how critical findings are monitored for tunnels owned by local agencies, and if necessary, addresses safety issues which are not being properly addressed by the owner. If an agency has a conservative definition of a critical finding, the reviewer should coordinate or develop a process with the agency to identify which critical finding meets the NTIS definition of a critical finding (structural or safety related deficiency that requires immediate follow-up inspection or action) and only include those critical findings which meet the NTIS criteria.

If it is determined that the critical finding for a tunnel does not meet the intent of the NTIS regulation, it can be removed from the population. This is done in an effort to not deter an agency from having a conservative procedure to address deficiencies and to focus FHWA's review on the regulatory intent of critical findings.

Metric #14: Inventory – Prepare and Maintain

NTIS Reference: 23 CFR 650.515 (b) – Prepare and maintain an inventory

Criteria

- An inventory of all tunnels subject to the NTIS is prepared and maintained.
- Data collected is in accordance with the Specifications for the National Tunnel Inventory (SNTI).
- Data is available for collection by FHWA as requested.

Population

All tunnels in the State.

Compliance Levels

Compliance (C): All of the following must be met for C:

- At least 95% of the SNTI inventory items and element condition data reviewed are within the acceptable tolerances.
- All identified items not within the acceptable tolerances have been corrected.
- FHWA data checks did not identify any tunnels with data errors.

Substantial Compliance (SC): All of the following must be met for SC:

- At least 90% of the inventory items reviewed are within the acceptable tolerances.
- No errors identified in the persistent error check, all other errors identified in the other FHWA data checks are resolved in 90 days.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Perform field reviews of the same tunnels selected for the Metric 6 Min-AL field review.
- Verify NTI Inventory data items with information in the tunnel file, inspection reports, and actual field conditions for the data items identified on the Field Review Form.

- Review any data quality checks generated during the NTI submittal process.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Perform field reviews of the same tunnels selected for the Metric 6 Int-AL field review.
- Verify NTI Inventory Data items with information in the tunnel file and actual field conditions for an additional set of 10 items from the list of items selected by the reviewer based on their knowledge and awareness of the program.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #14: Commentary

General:

Metric 14 assesses the quality of NTI data. The inventory data (no condition data) is reviewed and compared to the actual site conditions observed by the reviewer during the field reviews, and to the contents of the inspection report. Note that Metric 6 is also assessed during every field review. Metric 6 focuses on the quality of inspection condition data, including the element condition state ratings resulting from the inspection (intentionally excluded from this metric), whereas this metric assesses other NTI inventory data items associated with the tunnel record. This metric also assesses the accuracy of the elements identified for each tunnel, even though the condition state accuracy is assessed in Metric 12.

Criteria:

All the NTI data should be as accurate as possible, so even if a small number of errors are found, they should be corrected.

An inventory of all tunnels subject to the NTIS is prepared and maintained includes the preliminary inventory information and reflects the findings of the most recent tunnel inspection conducted.

Acceptable Tolerance is defined as the allowable variance for an NTI item as identified in the NTIP Field Review Form. These tolerances were developed for the NTIP assessment process based upon safety, access limitations, and time constraints during the field review and are to be used in assessing compliance.

FHWA data checks are processed during the annual NTI submittal and sent to the Division and State by the National Bridge and Tunnel Inventory Engineer in the Office of Bridges and Structures.

Population:

Tunnels in the State not yet reviewed since the most recent inspections.

Compliance Levels:

For C, all data items found to be outside the acceptable tolerance must be resolved and corrected, even if at least 95% of the items are coded within the acceptable tolerances. Until all items are corrected, the appropriate compliance determination is SC.

Where an item is being systemically miscoded, the underlying issue behind that problem must be corrected.

When calculating the percentage of items which are within tolerance as identified in the NTIP Field Review Form, divide the total number of items properly coded by total number of items reviewed.

Assessment levels:

It is intended that this metric be reviewed at the same assessment level as Metrics 6 & 7.

The NTIP Field Review Form identifies data items which are to be reviewed at the Min-AL for each field reviewed tunnel.

At the Int-AL, include the items identified at the Min-AL and 10 additional items selected by the reviewer on the Field Review Form. Knowledge of the program should be used in making this selection of the additional items.

During the field review of each tunnel, verify that the NTI inventory data which is reported to FHWA is properly coded and reflects what is present in the field. If an inventory item cannot be verified in the field, compare NTI data with available information in the tunnel record files. An example of an item which may be difficult to verify in the field is *Year Built*.

Do not to jeopardize safety when field verifying NTI data. If additional resources (lane closures, flaggers, etc.) are needed to safely verify actual field measurements, use judgment with partial or nearby measurements to determine if the actual measurements appear reasonable.

Metric #15: Inventory – Timely Updating of Data

NBIS Reference: 23 CFR 650.515 (c), (d) & (e) – Updating data in the inventory

Criteria

- Tunnel inventory data is submitted to the FHWA NTI as requested using FHWA established procedures.
- Tunnel inventory data is entered in the State’s inventory within three (3) months of the appropriate date for the following events:
 - Initial, routine, in-depth, damage and special inspections
 - Existing tunnel modifications that alter previously recorded data and for new tunnels
 - Load restriction or closure status

Population

Tunnels in the entire State

Compliance Levels

Compliance (C): All of the following must be met for C:

- Tunnel inventory data is submitted to the FHWA NTI by the requested date with no errors preventing FHWA acceptance of the data.
- State is able to verify tunnel inventory data is updated in the State inventory within three (3) months after an inspection, a modification to the tunnel, or change in load restriction or closure status.

Substantial Compliance (SC): All of the following must be met for SC:

- Tunnel inventory data is submitted to the FHWA NTI within 15 work days of the requested date; errors preventing acceptance are resolved within 30 work days after notification by FHWA.
- State is not able to verify tunnel data is updated in the State inventory within three (3) months after an inspection, a modification to the tunnel, or change in load restriction or closure status.

Non-Compliance (NC): One or more SC criteria are not met.

Conditional Compliance (CC): Adhering to FHWA approved plan of corrective action (PCA).

Assessment Levels (AL)

Minimum Assessment (Min-AL): Perform all of the following:

- Monitor PCA if in effect.
- Verify tunnel inventory data was submitted to the FHWA NTI and verify any issues identified were resolved in the specified timeframe.
- Assess based on previous review results and reviewer's knowledge and awareness of State's program.

Intermediate Assessment (Int-AL): In addition to the Min-AL:

- Assess how State is able to determine if tunnel inventory data is updated in the three (3) month timeframe through interview or review of procedures.
- Randomly sample to assess if tunnel inventory data is updated in the State's inventory within the three (3) month timeframe.

In-Depth Assessment (InD-AL): Perform one of the following:

- Division InD-AL – In addition to the Int-AL, develop guidelines for review, with concurrence from BSE, and conduct in accordance with guidelines.
- National InD-AL – Conduct in accordance with national direction and guidelines.

Metric #15: Commentary

General:

The three (3) month requirement for updating tunnel inventory data refers to data entered into the State inventory. This means it is expected that updated tunnel inventory data is available in a central location for submittal to FHWA upon request. The 3 month timetable is from the date found, modified, or restricted. For a long inspection lasting several weeks or months, it should apply from the date actually inspected or identified during the inspection.

Although each inspection is associated with a particular date (MM/DD/YYYY), the updating of data is required within three (3) months, based on the month of the inspection. For example, if an inspection takes place on August 15, data from that inspection that needs to be updated into the state's inventory will need to be in the inventory by the end of November.

Criteria:

FHWA typically requests the data each year in an annual call for data memorandum. As needed, additional calls for data are possible.

The State has three (3) months from a completion of an inspection, completion of work on a tunnel modification or new construction, or changes in load restriction or closure status to update their tunnel inventory data. It is understood inspections of some tunnels may take more than a day, in some cases several weeks, depending on complexity and size of the tunnel. Any updates to the tunnel data must be entered into the state's inventory within three (3) months after completion of inspection.

Assessment levels:

As identified in the annual call for data memorandum, a State should run the error check on UPACS, if available, and address any errors prior to submittal of the data. Alternatively, an internet version of this error check, *NTI Submittal File Check*, is available on FHWA's Website at the following address <http://www.fhwa.dot.gov/bridge/inspection/tunnel/>.

If an extremely unusual circumstance arises and the State is requesting a time extension beyond the identified submittal date, the Division is to coordinate with the National Bridge and Tunnel Inventory Engineer in the Office of Bridges and Structures to determine if a time extension is acceptable and to establish a revised submittal date. At the Int-AL, the intent of *assess how State is able to determine if tunnel inventory data is updated in the three (3) months timeframe*, is to determine if the State has the ability to verify that data is being updated into the State inventory within three (3) months after inspection, modifications, or changes in load restrictions. This would typically be done by interviewing the person responsible for managing the data or review of procedures. If it is determined through this process that the timeframes cannot be verified, this would be considered SC and an improvement plan should be developed.