

- **Presenter: Jose Ortiz**
- **Agency: Federal Highway Administration**

- **Bio**

Jose Ortiz has worked for the Federal Highway Administration Indiana Division since 2016. He is responsible for the stewardship and oversight of Indiana's bridge inspection, management and design programs, as well as the geotechnical and hydraulic programs. Previous work experience included working for Eastern Federal Land as a bridge inspector and bridge designer.



FHWA NBIP, NTIP COMPLIANCE REVIEW & HIGHLIGHTS



**Presented by: Jose Ortiz
FHWA Division Bridge Engineer
Bridge Inspection Workshop II
January 22nd, 2021**

AGENDA

- **Bridge Review**
 - **Metrics Review Summary**
 - **Frequency Metrics**
 - **Quality of Inspections**
 - **Critical Findings**
- **NBI data submittal**
- **Tunnels**
- **Extended Frequency**
- **FHWA Highlights**



COMPLIANCE SUMMARY

- **PY2020**

- **Compliance: 14**
- **Substantial Compliance: 5**
- **Conditional Compliance: 4**

- **PY2021**

- **Compliance: 15**
- **Substantial Compliance: 3**
- **Conditional Compliance: 4**
- **Non-compliance: 1**

State Name:	Metric Number	Prior Year	Assess. Level	Dec 31. Compl.	Mar 31. Compl.
Indiana					
01 - Bridge Inspection Organization	C	Min	C		
02 - Qualifications of Personnel - Program Manager	C	Min	C		
03 - Qualifications of Personnel - Team Leader(s)	C	Min	C		
04 - Qualifications of Personnel - Load Rating Engineer	C	Min	C		
05 - Qualifications of Personnel - UW Bridge Inspection Di	C	Min	C		
06 - Inspection Frequency - Routine - Lower Risk Bridges	SC	Int	SC		
07 - Inspection Frequency - Routine - Higher Risk Bridges	SC	Int	SC		
08 - Inspection Frequency - Underwater - Lower Risk Bridg	C	Min	C		
09 - Inspection Frequency - Underwater - Higher Risk Brid	C	Min	C		
10 - Inspection Frequency - Fracture Critical Member	SC	Int	C		
11 - Inspection Frequency - Frequency Criteria	SC	Int	SC		
12 - Inspection Procedures - Quality Inspections	C	Min	C		
13 - Inspection Procedures - Load Rating	CC	Int	CC		
14 - Inspection Procedures - Post or Restrict	C	Min	C		
15 - Inspection Procedures - Bridge Files	CC	Min	CC		
16 - Inspection Procedures - Fracture Critical Members	CC	Min	CC		
17 - Inspection Procedures - Underwater	C	Min	C		
18 - Inspection Procedures - Scour Critical Bridges	CC	Min	CC		
19 - Inspection Procedures - Complex Bridges	C	Min	C		
20 - Inspection Procedures - QC/QA	C	Int	C		
21 - Inspection Procedures - Critical Findings	SC	Int	NC		
22 - Inventory - Prepare and Maintain	C	Min	C		
23 - Inventory - Timely Updating of Data	C	Min	C		

INSPECTION FREQUENCY

- **6 Frequency metrics**
 - **Routine low risk**
 - **Routine High risk**
 - Item 59 or 60, or 62 <5 or,
 - Item 70 <5 or
 - Item 63=5 and Item 70=5 and Item 41=B, P or R or
 - Item 113 = 0,1,2,3,6,T, or U
 - **Underwater low risk**
 - **Underwater high risk**
 - Item 60 or 62 <5 or
 - Item 113=0, 1,2,3,6,T, or U
 - **Fracture Critical**
 - **Frequency criteria**



Routine <24 or 48, Underwater <60, Fracture critical <24

INSPECTION FREQUENCY

- **Routine low risk**
 - 85% $\leq$ 24 months
 - 100% $\leq$ 25 months
- **Routine High risk**
 - 95% $\leq$ 24 months
 - 100% $\leq$ 25 months
- **Underwater low risk**
 - 85% $\leq$ 60 months
 - 100% $\leq$ 61 months
- **Underwater high risk**
 - 95% $\leq$ 60 months
 - 100 % $\leq$ 61 months



- **Fracture Critical**
 - 95% $\leq$ 24 months
 - 100 % $\leq$ 25 months

DELINQUENT INSPECTIONS

- **INDOT Bridge Inspection Manual**
 - **Part 2 Section 2.01(01)**

2-2.01(01) Delinquent Inspections

An inspection is considered delinquent when the inspection interval exceeds the required interval. If an inspection cannot be completed on time, the inspection team leader must notify the INDOT Bridge Inspection Manager prior to exceeding the inspection interval. That notice will include the Delinquent Inspection form located in BIAS under the Help tab in the documentation folder. The document is labeled “How to complete a Delinquent Inspection Form” The form is attached to the bottom of the instructions. See Appendix 2A

INSPECTION FREQUENCY

- **Metric 11 - Frequency criteria –**
Criteria is established to
determine level of inspection,
and frequency.



Routine	FC	UW	Other Special
986	27	15	322
8	0	0	2
0	0	0	0
0	0	0	0
0	0	0	0
994	27	15	324
99%	100%	100%	99%
●	○	○	●

Routine	FC	UW	Other Special
885	26	16	188
0	0	0	1
0	0	0	0
0	0	0	0
0	0	0	0
885	26	16	189
100%	100%	100%	99%
○	○	○	●

All inspections must meet the criteria for compliance.

QUALITY OF THE INSPECTIONS

- **Field Review – Metric 12**
- **Sample is based on criteria determined to ensure selection of bridges with target risk factors, conditions and other characteristics**
- **FHWA sampling tool**



Due to COVID-19 travel restrictions, not field visits were conducted

PY20		Sampling Tool							Indiana			5/8/2019		
Data File:	L:\Program\Structure...andards\Annual FHWA Review\PY 2020\MAR\IN_2019.txt										Date: 04/23/19		Size: 10,176,255	
Total Population:		18,917	1,594	19,099	373	560	16,701	6	27	11,791	Field Rev	File Reviews - Int or InD Sample Type	Total Sample Size	
Sample Type:		Min	Min	Min	Min	Min	Min	Min	Min	Min				
Required Sample Size:		0	0	0	0	0	0	0	0	0	Tier 1 LOC 80 MOE 15			
Sample Selected:		0	0	0	0	0	0	0	0	0				
Locked	Field Population:	11,629	1,058	NA	238	365	10,329	3	27	NA	11,791			
Target Field Sample Size:		0	2		0	0	0	0	2		19			
Selected for Field Review:		20	5		2	0	12	0	2		20	0	20	
Rnd Num	8 Str Num	M13	M14	M15	M16	M17	M18	M19	M21	M23	M12/21	FileRev	TotSam	
0.000030	080584	P	-	P	-	-	-	-	-	P	F	0	1	
0.000106	3300060	P	-	P	-	-	P	-	-	-	-	0	0	
0.000165	6700163	P	P	P	-	-	P	-	-	P	F	0	1	
0.000178	5000048	P	-	P	-	-	P	-	-	P	F	0	1	
0.000217	049140	P	-	P	-	-	-	-	-	P	F	0	1	
0.000274	047860	P	-	P	-	-	-	-	-	P	F	0	1	
0.000281	076560	P	-	P	-	-	-	-	-	P	F	0	1	
0.000308	005181	P	-	P	-	-	-	-	-	P	F	0	1	
0.000360	4600164	P	-	P	-	-	P	-	-	-	-	0	0	
0.000362	6200070	P	P	P	-	-	P	-	-	-	-	0	0	
0.000455	6500193	P	-	P	-	-	P	-	-	P	F	0	1	
0.000549	0100123	P	-	P	-	-	P	-	-	P	X	0	0	
0.000572	7800027	P	-	P	-	-	P	-	-	P	F	0	1	
0.000699	070610	P	-	P	-	-	-	-	-	P	F	0	1	
0.000702	076860	P	-	P	-	-	-	-	-	P	F	0	1	
0.000743	000950	P	-	P	-	-	P	-	-	-	-	0	0	
0.000751	3400011	P	-	P	-	-	P	-	-	P	-	0	0	
0.000805	032828	P	-	P	-	-	-	-	-	P	-	0	0	
0.001032	048990	P	-	P	-	-	-	-	-	-	-	0	0	
0.001073	027160	P	-	P	-	-	P	-	-	P	-	0	0	
0.001096	0400032	P	-	P	-	-	P	-	-	-	-	0	0	
0.001151	050260	P	-	P	-	-	-	-	-	P	F	0	1	
0.001176	000860	P	-	P	-	-	P	-	-	-	-	0	0	
0.001182	8900135	P	-	P	-	-	P	-	-	P	-	0	0	
0.001192	1200010	P	-	P	-	-	P	-	-	P	F	0	1	
0.001257	080476	P	-	P	-	-	P	-	-	P	F	0	1	
0.001432	0600181	P	-	P	-	-	P	-	-	-	-	0	0	

QUALITY OF THE INSPECTIONS

Priority	Metric-NBI	Min	Max*	OptA	M-N	Description
1	21	2	4		M	Critical findings**
2	Cond24		4	2-4	N	NBI Items 59/60/62 = OptA
3	14	2	4		M	Posting**
4	16	0	4		M	FC**
5	17	0	4		M	UW**
6	19	0	2		M	Complex
7	18	0	5		M	Scour**
8	Cond56		4	5-6	N	NBI Items 59/60/62 = OptA
9	Cond79		4	7-9	N	NBI Items 59/60/62 = OptA
11	104		5		N	NHS
12	13	0	4		M	Load rating, note Item 63=5 excluded**
14	15	0	4		M	Random - fills out remaining sample (if needed) in random order (using Metric 15)

Field Review Checklist

PY2019

NBIP Review

Str.No.: 006620

SR 26 over MUD PINE CREEK

Rev.Date: _____

State(1): 185-Indiana InspDate(90): Jan-18 Lat(16)/Long(17): 40.458478,-87.361467
 Deck(107): 1-CIPConcr Main(43): 3-Steel / 10-Truss-Thru Span(48)/Len(49): 96' /98'
 Owner(22): 01-StateDOT Built(27)/Recon(106): 1933/2000 ScourCrit(113): 8 - Stable, scour above ftg
 ORmeth(63): 1-LF OR(64): 42.3 T IR(66): 25.2 T ADT(29)/Yr(30): 430 ('09)
 Review Team: _____

Review most recent inspection reports for all applicable inspection types. Bridge is in the population (P) and being assessed at the Int-AL (shaded) for the following metrics:

M13	M14	M16	M17	M18	M19	M21
P	-	P	-	P	-	-

Metric 12 – Quality Inspections (Circle all appropriate responses)

Item	Recorded Ratings		Review Team Rating	Notes	Meets Criteria?
	NBI SI&A	Insp Report			
58 - Deck	6				Y / N (±1 rating)
59 – Super	6				Y / N (±1 rating)
60 – Sub	6				Y / N (±1 rating)
62 - Culvert	N				Y / N (±1 rating)
Criteria	Review Team Insp Report Assessment		Notes/Explanation		Meets Criteria?
All notable deficiencies identified?	All/None/NA (no notable deficiencies)				Y / N NA
Narrative justifies cond. ratings?	Yes/No/NA (narrative not needed)				Y / N NA
FC/UW/Complex required & properly done	Yes/No/NA				Y / N NA
FC/UW/Complex Report results reflected in condition ratings	Yes/No/NA				Y / N NA
Followed MBE procedures?	Yes/No				Y / N
Qualified TL present during inspection(s)?	Indicated by identification on report, field observation, or other indicators		TL: _____		Y / N
UW - Qualified Diver(s)			Diver(s): _____		Y / N NA
Overall Field Assessment of Adequacy of this Inspection					Y / N
Only circle Y (Yes) if all the dark shaded boxes above are Yes or NA.					

Field Review Checklist

PY2019

NBIP Review

Str.No.: 006620

SR 26 over MUD PINE CREEK

Rev.Date: _____

Metric 22 – Minimum Level Review Items (Circle all appropriate responses)

SI&A Item / Tolerance (* whichever is greater)	NBI SI&A (English units)	Review Team Code (Explain differences; use Notes section if needed)	Meets Accuracy?
70 - BRIDGE POSTING	5		Y / N
41 - STRUCTURE OPEN, POSTED OR CLOSED	A		Y / N
113 - SCOUR CRITICAL BRIDGES	8		Y / N
48 - LENGTH OF MAX SPAN/ ±10% or 1' *	96'		Y / N
49 - STRUCTURE LENGTH/ ±10% or 1' *	98'		Y / N
50A - CURB OR SIDEWALK: LEFT/ ±10% or 1' *	0.0'		Y / N
50B - CURB OR SIDEWALK: RIGHT/ ±10% or 1' *	0.0'		Y / N
51 - BR RDWY WIDTH CURB-CURB/ ±10% or 1' *	23.6'		Y / N
52 - DECK WIDTH OUT TO OUT/ ±10% or 1' *	24.9'		Y / N
32 - APPR RDWY WIDTH (W/SHLDERS)/ ±5'	22'		Y / N
33 - BRIDGE MEDIAN	0		Y / N
34 - SKEW/ ±10 degrees	0		Y / N
35 - STRUCTURE FLARED	0		Y / N
10 - INVENTORY ROUTE MIN VERT CLEAR/ ±1'	99.90'		Y / N
47 - INV RTE TOTAL HORIZ CLR/ ±10% or 1' *	23.6'		Y / N
56 - MIN LATERAL UNDCCLR - LEFT/ ±10% or 1' *	0.0'		Y / N

Additional Notes:

QUALITY OF THE INSPECTIONS

Structure No.	58,59,60,62	Notable Deficiencies	Justify	FC/UW/Complex Properly done	FC/UW/Complex refileted in condition rating	Folloed MBE?	TL?	Diver?	Pass M12?
Total Structures	19	19	19	19	19	19	19	19	19
Yes	19	19	17	19	19	19	19	19	17
No	0	0	2	0	0	0	0	0	2
% Met	100.0%	100.0%	89.5%	100.0%	100.0%	100.0%	100.0%	100.0%	89.5%

QUALITY OF THE INSPECTIONS

(60) SUBSTRUCTURE: **2 - Critical Condition (advance loss to primary structure, may close bridge)**

Comments:

Critical - Footings exposed, Severe scaling

Material: Concrete abutments

(113) SCOUR CRITICAL BRIDGES: **2 - Immediate action required**

Comments:

(59) SUPERSTRUCTURE: **3 - Serious Condition (primary structure affected)**

Comments:

Serious - Large spalls bottoms of girders with fully exposed rebar

Material: Continuous Reinforced Concrete Girder

(60) SUBSTRUCTURE: **2 - Critical Condition (advance loss to primary structure, may close bridge)**

Comments:

Critical - Pier 2 and Abutment 3 footings exposed

Material: Concrete abutments and pier

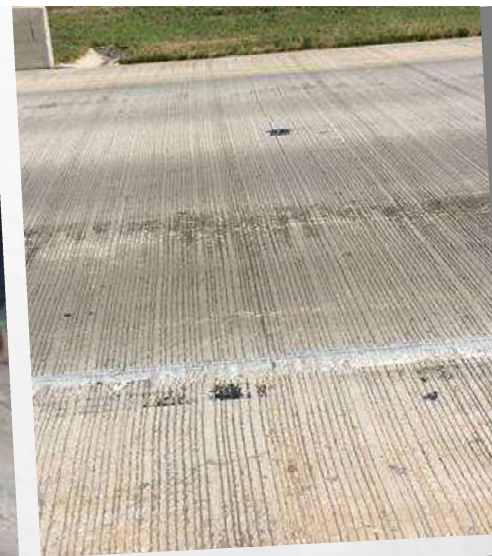
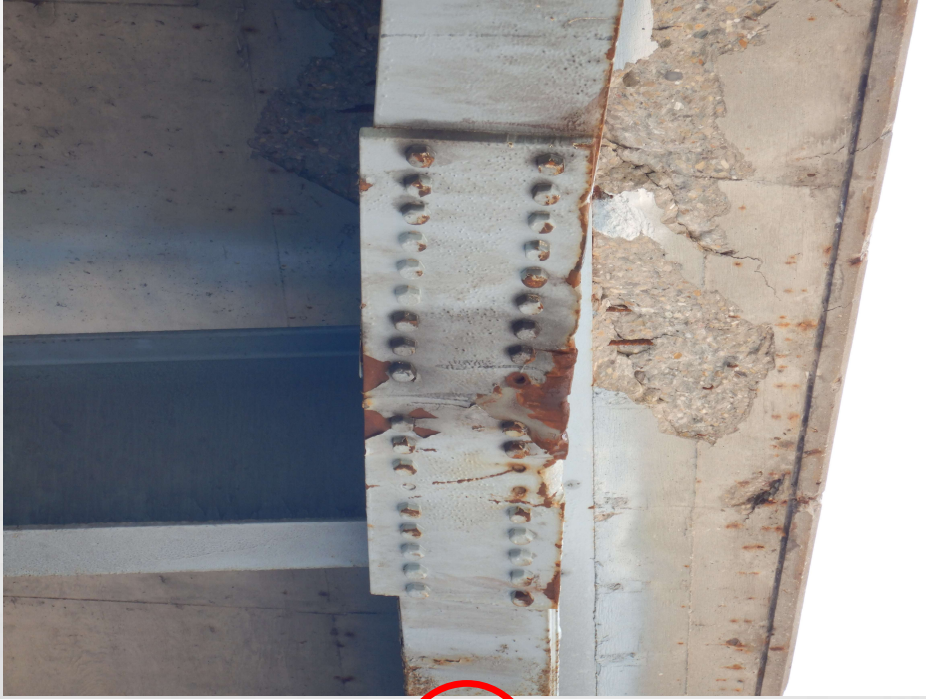


PHOTO DOCUMENTATION





1



2



1



2

...Bridge profile



1



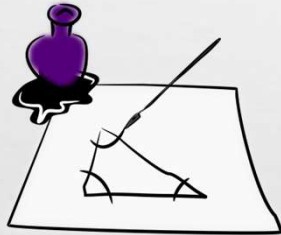
2

...Approach joint condition



General top side view

QUALITY OF THE INSPECTIONS



Location



Extent



Severity

CRITICAL FINDINGS

- **Memorandum No. 19-03**
 - **Two critical findings classifications**
 - **Urgent – Action taken within 24 hours**
 - **Severe – Action taken within 3 days**



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue
Room N642

PHONE: (317) 232-6220

Eric Holcomb, Governor
Joe McGuinness, Commissioner

Bridge Inspection Memorandum No. 19-03

December 2, 2019

TO: All Inspection Personnel and Consultants

FROM: /s/Andrew Fitzgerald
Andrew Fitzgerald, PTOE, PE
Bridge Inspection Manager

Bridge Management Division

SUBJECT: Critical Findings on Bridges

REVISES: Bridge Inspection Manual Part 1 – Section 1-4.02(01)

EFFECTIVE: Immediately

The Inspector shall notify the State Program Manager at the time he reports a Critical Finding as to whether the Critical Finding is "Urgent" or "Severe". For both classifications, short-term and long-term action plans are required. An "Urgent" Critical Finding must have an action completed and the Critical Finding closed-out with 3-days of it being found. A "Severe" Critical Finding must have an action completed and the Critical Finding closed-out within 30-days of the Critical Finding being found. This longer time may be used to conduct a load rating, have signage made, or other items that cannot be done immediately.

All "Urgent" cases require the bridge to be either partially or fully closed immediately (within 24 hours) upon discovery of the defect.

CRITICAL FINDINGS

- **Non-Compliance**
 - **4 bridges out of 14 not meeting requirements**
 - **No critical finding submitted**
 - **No notification was sent to FHWA**
 - **Critical finding was not addressed in timely matter**



CRITICAL FINDINGS

- **FHWA Critical Finding Database (CFD)**
 - Provide a mechanism for documentation, communication, and monitoring of trends of critical findings and their solutions
 - Provide historical information to national level programs on bridge and tunnel safety that can be used to identify and target vulnerabilities and trends in bridge performance or management practices
- **Critical findings reported to the National Database**
 - Critical findings that seriously affect capacity of primary components, including component condition ratings of 3 or less, will be included in this database
 - Collision damage seriously affecting the structural capacity
 - Substructure units with severe scour and undermining causing instability
 - Load posting require but not implemented (All signs not in-place or not correctly posted)



NBI DATA SUBMITAL

- **Data is submitted every year on March 15th**
- **Data is checked for errors before submitting it**
- **Within 2 month the data gets accepted or rejected**
- **NBIP or NTIP cannot start until the data is accepted**



NBI data & Element data was submitted on-time

NBI DATA SUBMITAL

- **If the data is rejected...**
 - **“Fatal Errors” must be corrected within 15 days**
 - **Other errors within 90 days**
 - **Fatal errors are taken in consideration when evaluating metric 22**

Notes:

- Only tabs that contain data are included in the processing file.
- The “Posting” tab and the “OR 2.7_19.9” tab have been discontinued, as this information is contained in the MAR reports.

State: IN

Data Accepted? NO

Data Submitted By March 15, 2018? YES

Resubmittal Required By: 5/30/18

Acceptable Resubmittal Received By Required Date?

The following FATAL errors must be resolved and data resubmitted within 15 working days:

- *Fatal tab: 6 structures show key data missing that prevents the file from being uploaded. The data should be corrected and resubmitted.*

Note: Because the Item 32 errors are new this year and were not available in the error checker prior to submittal, they should not be considered in the determination of compliance for Metric 22.

Further data clarification/justification needed? YES

- *There was a 14% decrease in structurally deficient deck area, which may indicate data problems. We are currently investigating this change.*

Items of note:

- *Err_summ and Err_detail tabs: Must resolve within 90 days. In addition to the fatal errors, there are some routine errors shown on these tabs that should be addressed. If corrections can be made prior to resubmittal, that is preferred.*
- *Other: You mentioned that approximately 170 bridges in Indiana need to change their designation from non-NHS to NHS. If that change can be made prior to resubmittal, that is strongly preferred.*

NBI DATA SUBMITTAL

State: **IN**

Data Accepted? **YES**

Data Submitted By March 15, 2018? **YES**

Resubmittal Required By: **Not Required**

Acceptable Resubmittal Received By Required Date? **YES**

Further data clarification/justification needed? **NO**

Items of note:

- *As we have discussed, there was a very large decrease in structurally deficient deck area, which has been duly analyzed and justified. No further action is required.*
- *Err_summ and Err_detail tabs: Must resolve within 90 days. There are 18 load rating errors on these tabs that should be addressed. Please continue to work with Jon Nekritz and your State toward resolution.*
- *You mentioned previously that approximately 170 bridges in Indiana need to change their designation from non-NHS to NHS. It is not clear whether the change was made prior to resubmittal. It is best that the change be made prior to the mid-year archive in order to accurately calculate the bridge condition measures.*

Please discuss the attached processing file with the State, ensuring that the information shown on the “Adds”, “Deletes”, and “Processing” tabs is correct. Please see the NBIP [SharePoint](#) Site for further information.

EXTENDED FREQUENCY

- **A screening criteria is in-place**
- **Approval process has change**
 - **INDOT central office provides final approval**

Screening criteria:

1. The deck, superstructure, and substructure must have a condition rating of 6 or greater.
 2. The structure must have load path redundancy.
 3. The superstructure must be constructed using steel or concrete. If the superstructure is constructed using adjacent box beams, there must be a structural concrete deck.
 4. Structures over traffic must have a minimum vertical clearance of 14'-6" with minimal risk of vehicular collision and must not show signs of vehicular impact.
 5. The structure must not have been recently rehabilitated or newly constructed. The structure may be considered for an extended frequency after the first routine inspection.
 6. The structure must have valid load ratings with operating ratings greater than the State's legal loads.
-
7. Structure must not be highly susceptible to fire damage, or collision damage (e.g. structures with parking spaces underneath, narrow bridges, pony trusses, covered bridges).
 8. The structure must not have joints that are presently leaking.
 9. The structure must not be at risk of over topping and item 113 from the Structure Inventory and Appraisal Sheet must be rated N, 9, 8, 7, or 5.
 10. The structure must not have fatigue prone details, out of plane bending cracks, risk of constraint-induced fracture, cover plates, or pins and hanger details.
 11. Structures must not have an average daily truck traffic (ADTT) greater than 14,500. This value represents two standard deviations from a normal distribution which eliminates our bridges on segments of the Interstates with the highest truck volumes.
 12. Complex and border bridges are not included in the alternate bridge inspection program.

TUNNELS

- **National Tunnel Inspection Standards**
 - **Full Implementation Nationwide in June 2019**
 - **Implementation process**
 - 5 metrics assessed at the intermediate level
 - 10 metrics assessed at the minimum level
 - **New INDOT Tunnel Program Manual is now available!**



TUNNELS

- **10 metrics in full compliance**
- **3 metrics don't apply**
- **2 in substantial compliance**
 - **Tunnel files**
 - **QC/QA**
- **Metric 7 Tunnel-Specific procedures**

01 - Tunnel Inspection Organization	C	Min	C	C
02 - Qualifications of Personnel - Program Manager	C	Min	C	
03 - Qualifications of Personnel - Team Leader(s)	C	Min	C	
04 - Inspection Interval - Initial and Routine	C	Min	C	
05 - Inspection Interval - Damage, In-Depth and Special Inspections	NA	Int	C	
06 - Inspection Procedures - Quality Inspections	NA	Min	C	
07 - Inspection Procedures - Tunnel-Specific Inspection Procedures	NA	Min	C	C
08 - Inspection Procedures - Functional Systems Testing	NA	Min	NA	
09 - Inspection Procedures - Load Rating	NA	Min	NA	
10 - Inspection Procedures - Post or Restrict	NA	Min	NA	
11 - Inspection Procedures - Tunnel Files	NA	Int	SC	
12 - Inspection Procedures - QC/QA	NA	Min	SC	
13 - Inspection Procedures - Critical Findings	NA	Min	C	
14 - Inventory - Prepare and Maintain	NA	Min	C	
15 - Inventory - Timely Updating of Data	C	Min	C	

FHWA HIGHLIGHTS

- **Notice of proposed rule making (NPRM) for the National Bridge Inspection Standards (NBIS)**
- **New Specifications for the National Bridge Inventory are expected to be released at the same time**
- **60-day comment period ended on March 13, 2020**
- **All comments submitted must be addressed**
- **Late Spring / Summer 2021**
- **Transition period is also expected**
- **Metrics review manual will also be updated when the times comes to incorporate the new NBIS**
- **Anything in the NPRM or the proposed SNBI is just that at this point, proposal**
- **Current NBIS and coding guide still in effect**





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