

**APPENDIX F: COMMENTARY – ITEM CHANGES AND
COMPARISON WITH THE 1995 *RECORDING AND CODING GUIDE***
(Organized by NBI Item Number Used in 1995 Guide)

It may be noted that all items below which are collected based upon units of measurement, such as length measurements, are now proposed using dual English/Metric units. Responses to the previous draft forwarded for comment in 2005 indicated a strong desire by many stakeholders to revert to English units. At the Federal-level, the data will be stored in Metric units; however, this does not preclude individual States from maintaining their data in English units. To accommodate both the stakeholders that desire English units and Metric units, this manual is produced in dual units. Instructions for data submittal and procedures used to translate English to Metric units will be distributed separately with the final version of the specifications after the comment period.

1. State Code

In the existing Guide, a three digit, compound code consisting of the State FIPS Code (2 digits) and the FHWA Region Code (one digit) was employed. The FHWA Region Codes are obsolete and no longer required. Thus, the State Code was changed from a three digit code to a two digit code. The new State code can be obtained by truncating the last digit (the Region Code) of the existing code. This makes the NBI State code equivalent to the 2-digit Census FIPS codes.

2. Highway Agency

No coding changes are proposed.

3. County (Parish) Code

No coding changes are proposed.

4. Place Code

No coding changes are proposed.

5. Inventory Route Information

a. Record Type

No Coding Changes are proposed.

b. Route Type

No Coding Changes are proposed.

c. Designated Level of Service

No Coding Changes are proposed.

d. Route Number

Changed to indicate the direction together with the route number. This information was distinctly maintained in the Guide where the route number was indicated in Item 5D and the directional suffix maintained in Item 5E. States should code the route number directional suffix together when the roadway carried by the bridge is distinctly defined by the directional suffix (i.e. a bridge carrying both directions of I-95 would be coded as 00095 while a bridge carrying only the southbound traffic of I-95 would be coded as 0095S). Care should be taken to ensure that the coding of this item is consistent with the information maintained (and necessary) for the State GIS and LRS systems.

This action was proposed in the previous version distributed for comment in 2005. This version retains the change proposed previously.

6. Feature Intersected –

Critical facility indicator has been removed. Field length changed from 25 characters to 50 characters. Field lengths were increased to accommodate needs expressed by stakeholders. Expansion of the field lengths was proposed in the previous version distributed for comment in 2005. This version changes the field length to 50 characters as opposed to the larger size proposed previously.

7. Facility Carried

Field length changed from 18 characters to 50 characters. Field lengths were increased to accommodate needs expressed by stakeholders. Expansion of the field lengths was proposed in the previous version distributed for comment in 2005. This version changes the field length to 50 characters as opposed to the larger size proposed previously.

8. Structure Number

No coding changes are proposed.

9. Location

Field length changed from 25 digits to 50 characters. Field lengths were increased to accommodate needs expressed by stakeholders. Expansion of the field lengths was proposed in the previous version distributed for comment in 2005. This version changes the field length to 50 characters as opposed to the larger size proposed previously.

10. Inventory Route Minimum Vertical Clearance –

ITEM REPLACED – The information previously collected in this item is included in the item for Minimum Vertical Clearance over Roadway, which combines this information with the data formerly maintained in Item 53.

11. Kilometer/Milepoint

This item is modified to accommodate both metric units (kilometerpoints) and English units (milepoints).

12. Base Highway Network –

ITEM DELETED – This was proposed in the previous version distributed for comment in 2005. Stakeholders articulated that this information was not required and no compelling reason was presented for retaining the item.

13. LRS Inventory Route, Subroute Number

a. LRS Inventory Route

This item is changed to accommodate Metric or English. Responses to the previous draft forwarded for comment in 2005 indicated a strong desire by many stakeholders to revert to English units. At the Federal-level, the data will be stored in Metric units; however, this does not preclude individual States from maintaining their data in English units. To accommodate both the stakeholders that desire English units and Metric units, this manual is produced in dual units. Instructions for data submittal and procedures used to translate English to Metric units will be distributed separately with the final version of the specifications after the comment period.

b. LRS Subroute Number

No coding changes are proposed.

14. Not used/Reserved – Item Deleted

15. Not used/Reserved – Item Deleted

16. Latitude

Changed from DMS format to Decimal degrees. This change is proposed to simplify data collection, particularly with implementation of GPS data.

17. Longitude

Changed from DMS format to Decimal degrees. This change is proposed to simplify data collection, particularly with implementation of GPS data.

18. Not used/Reserved - Item Deleted

19. Bypass, Detour Length –

This item was changed to accommodate English and Metric units.

20. Toll-

No coding changes are proposed.

21. Maintenance Responsibility

No coding changes are proposed.

22. Owner

No coding changes are proposed.

23. Not used/Reserved – Item Deleted

24. Not used/Reserved – Item Deleted

25. Not used/Reserved – Item Deleted

26. Functional Classification of Inventory Route

No coding changes are proposed.

27. Year Built

No coding changes are proposed.

28. Lanes On and Under the Structure

In the *Guide*, the lanes on and lanes under information was maintained in a compound, 4-digit field where the first 2 digits indicated the number of lanes on the bridge and the second two digits indicated the number of lanes under the bridge. These were defined as separate fields in the *Specifications*.

a. Lanes On

No coding changes are proposed.

b. Lanes Under

No coding changes are proposed.

29. Average Daily Traffic

No coding changes are proposed.

30. Year of Average Daily Traffic

No coding changes are proposed

31. Design Load

The design load code was changed from a single digit code to two digit code to accommodate additional codes. Codes 1 – 9, which are currently employed in the *Guide*, are effectively unchanged becoming codes 01 – 09 respectively. Code 0, which formerly was for other or unknown now only indicates unknown design loads. Code 10 is added for HL-93. Code 11 is added to indicate design loads that are greater than HL-93 or MS22.5. Other design loads are coded as 12.

32. Approach Roadway Width

Changed to accommodate English (feet) and Metric (meters) units.

33. Bridge Median

Changed to indicate the number of medians present on or under the bridge instead of the type of median. The number of medians is required to calculate appraisal items. The type of median was proposed to be eliminated in the previous version of the Specifications distributed in 2005.

34. Skew

No coding changes are proposed.

35. Structure Flared

ITEM DELETED – This was proposed in the previous version distributed for comment in 2005. Stakeholders articulated that this information was not required and no compelling reason was presented for retaining the item.

36. Traffic Safety Features

Traffic safety features are retained and no changes are proposed to the coding, which indicated whether or not the feature meets currently acceptable standards. Furthermore, the features are now collected as separate items. Features are as follows:

- a. Bridge Railings
- b. Transitions
- c. Approach Guardrail
- d. Approach Guardrail Ends

37. Historical Significance

No coding changes are proposed.

38. Navigation Control

The Guide maintains a code indicating whether there is navigation control on the waterway (i.e. whether a bridge permit is required by the Coast Guard – note that typically such a permit is required any time work is being performed on a bridge over navigable waterways). This field is modified to indicate simply whether or not the bridge crosses a navigable waterway (note that this will not indicate whether the bridge is crossing water as all bridge crossing non-navigable waterways together with those which do not cross waterways are coded as N – bridge does not cross a navigable waterway).

39. Navigation Vertical Clearance

Changed to accommodate English (feet) and Metric (meters) units. THERE IS SA CHANGE FOR VERTICAL LIFT BRIDGES

40. Navigation Horizontal Clearance

Changed to accommodate English (feet) and Metric (meters) units.

41. Structure Open, Posted, or Closed to Traffic

All codes from the Guide are retained as in these Specifications. One code is proposed to be added:

C – Open, Closure recommended but not legally implemented.

42. Type of Service

In the Guide, the type of service was reported as a two digit compound code where the first digit indicated the service on the bridge and the second digit indicated the service under the bridge. Service on and service under are defined in these Specifications as separate items. There are no coding changes proposed.

43. Structure Type, Main & Item 44, Structure Type, Approach

The structure type coding for the main and approach spans in the *Guide* consisted of a compound, 3-digit field where the first digit reflected the material and continuity while the second two digits reflected the design type. These items were defined separately in the *Specifications*.

a. Material Type

Ten, 1-digit codes are used in the current Coding *Guide*. These codes were as follows:

- 1 – Concrete
- 2 – Concrete Continuous
- 3 – Steel
- 4 – Steel Continuous
- 5 – Prestressed Concrete
- 6 – Prestressed Concrete Continuous
- 7 – Wood or Timber
- 8 – Masonry
- 9 – Aluminum, Wrought Iron or Cast Iron
- 0 – Other

These codes were redefined in the Specifications. To avoid confusion and ensure data quality during the transition period, a two-digit coding system was developed. Material types were grouped by series: 10 series – Concrete, 20 series – Steel, 30 series – Timber, 40 series – Masonry, 50 series – Other metals, 60 series – Composites and new materials. With this categorization, there is a significant amount of space to accommodate future expansion and State-specific coding, which can then be translated into the codes defined below for submittal. Codes are as follows:

- 11 – Concrete

- 12 – Concrete, Pre-tensioned
- 13 – Concrete, Post-tensioned
- 21 – Steel, Painted
- 22 – Steel, Weathering
- 23 – Steel with Other Protective System
- 24 – Steel, Unprotected
- 31 – Timber
- 32 – Engineered Wood
- 41 – Masonry
- 51 – Aluminum
- 52 – Iron (wrought or cast)
- 61 – FRP Composite
- 99 – Other

A separate item was also added to address the continuity, which in the current guide captured together with the material type. The information is collected separately in the Specifications, in conformance with standard database design practices. The main span configuration codes are as follows:

- 1 – Simple Span
- 2 – Continuous span

b. Design Type

The design type codes were maintained with minor additions. Codes 01 through 18 were retained clarifications to the descriptions. Code 19 for culverts was eliminated and additional culvert items were added to reflect the type of culvert used. The following codes were employed:

- 31 – Box Culvert, Single (includes frame culverts)
- 32 – Box Culvert, Multiple Boxes
- 33 – Arch Culvert, Single
- 34 – Arch Culvert, Multiple
- 35 – Pipe Culvert, Single
- 36 – Pipe Culvert, Multiple

Code 20 in the Guide is for mixed-types. This code is retained in the Specifications and, as in the Guide, is only applicable for approach spans.

Code 21 has been retained for segmental box girders. Code 22, indicating channel beams in the Guide, has been expended to two codes indicating whether the channel beams are installed in an adjacent or single/spread design. Codes for channel beams are thus as follows:

- 25 – Channel beam – Adjacent
- 26 – Channel beam – Single or spread

Other designs not included in the list above are coded as 99 in the *Specifications*. These designs were previously coded as 00 in the *Guide*.

- 44. Approach Spans (see above discussion on main span material and design type).

Note that for approach span material type, a code of NA is applicable where there are no approach spans. For approach span configuration, a code of N is added to cover situations where there are no approach spans. Likewise, for the approach span design type, a code of NA for not applicable is added. Furthermore, for approach span design type, a code of 20 indicating mixed types is also applicable, as has been indicated in the previous discussion above.

45. Number of Spans in Main Unit

No coding changes are proposed.

46. Number of Approach Spans

No coding changes are proposed.

47. Inventory Route, Total Horizontal Clearance

ITEM DELETED – The information required from total horizontal clearance is captured by minimum horizontal clearance items included in the geometric data section.

48. Length of Maximum Span

Changed to accommodate English (feet) and Metric (meters) units.

49. Structure Length

Changed to accommodate English (feet) and Metric (meters) units.

50. Curb or Sidewalk Widths

The curb and sidewalk widths are currently maintained for the left and right widths in a single compound field in the Guide. The information is separated in the Specifications and two fields are used to define the left and right curb and sidewalk widths. Outside of the field redefinition, data is only changed to accommodate English (feet) and Metric (meters) units.

51. Bridge Roadway Width, Curb-to-Curb

Changed to accommodate English (feet) and Metric (meters) units.

52. Deck Width, Out-to-Out

Changed to accommodate English (feet) and Metric (meters) units.

53. Minimum Vertical Clearance Over Bridge Roadway

ITEM REPLACED – The information previously collected in this item is included in the item for Minimum Vertical Clearance over Roadway, which combines this information with the data formerly maintained in Item 10.

54. Minimum Vertical Underclearance

ITEM REPLACED - Changed to accommodate two different items: Roadway vertical underclearance and railroad vertical underclearance.

55. Minimum Lateral Underclearance on Right

ITEM REPLACED - The information required from lateral underclearance is captured by minimum horizontal clearance items included in the geometric data section.

56. Minimum Lateral Underclearance on Left

Changed to accommodate English (feet) and Metric (meters) units.

Note that this item is modified and this information is only applicable when a divided highway, one-way street or one-way ramp is under the bridge. Throughout the redevelopment of these Specifications, all attempts were made to bring the guide in line with the current AASHTO standards. For one-way highway segments, AASHTO provides guidance for standard shoulder widths to the right and the left. However, for two-way highway segments, guidance is only provided for the shoulder to the right of the travel way, regardless of direction. This, lateral underclearance information for bridges crossing these two-way highway segments is captured in the minimum horizontal clearance items used to replace item 55.

57. Reserved – Item Deleted

CONDITION RATINGS

In the proposed version of the Specifications distributed for comment, a 1 to 8 condition rating scale was proposed. A significant number of comments were received arguing against this change. In general, comments concluded that such a change would be too costly and such costs would outweigh the benefits obtained. While there is merit to the arguments which may be used to support the move to an 8 category scale, the FHWA agrees that benefits of doing so do not outweigh potential costs. Thus, the 0 to 9 condition rating scale was maintained.

In the previous version of the Specifications forwarded for comment in 2005, significant changes were made to incorporate quantitative language for the condition rating categories. This philosophical change was maintained and examination of the specifications will show that quantitative guidelines have been included for the deck, superstructure, substructure and culvert condition ratings. The addition of quantitative language in the guidelines is supplemented by graphs intended to assist inspectors in assigning ratings based on quantitative measures.

58. Deck

There is no change to the condition rating scale or the generalized descriptions (excellent to very good ... imminent failure to failure). Additional guidance is on the assignment of condition ratings is provided.

59. Superstructure

There is no change to the condition rating scale or the generalized descriptions (excellent to very good ... imminent failure to failure). Additional guidance is on the assignment of condition ratings is provided.

60. Substructure

There is no change to the condition rating scale or the generalized descriptions (excellent to very good ... imminent failure to failure). Additional guidance is on the assignment of condition ratings is provided.

61. Channel and Channel Protection

There is no change to the condition rating scale or the generalized descriptions (excellent to very good ... imminent failure to failure). Additional guidance is on the assignment of condition ratings is provided.

62. Culverts

There is no change to the condition rating scale or the generalized descriptions (excellent to very good ... imminent failure to failure). Additional guidance is on the assignment of condition ratings is provided.

63. Method Used to Determine Operating Rating

The method used to determine operating rating (item 63) and the method used to determine inventory rating (item 65) were recorded separately in the *Guide*. In the Specifications, only one field will be used to record the method used to determine the load rating. This requires that the same method be used for determining the inventory and operating ratings. Analysis of the data in the database shows that for the overwhelming majority of structures, the same method is currently used to determine inventory and operating ratings; therefore, this change is anticipated to have minimal impact on current practice. The existing codes used in the Guide, and as supplemented by the March 2004 memorandum, remain unchanged in the Specifications.

64. Operating Rating

The Operating Rating has been changed from recording metric tons to recording the load rating factor.

65. Method Used to Determine Inventory Rating

The method used to determine operating rating (item 63) and the method used to determine inventory rating (item 65) were recorded separately in the Guide. In the Specifications, only one field will be used to record the method used to determine the load rating. This requires that the same method be used for determining the inventory and operating ratings. Analysis of inventory data shows that for the overwhelming majority of structures, the same method is currently used; therefore, this change is anticipated to have minimal impact on current practice. The existing codes used in the Guide, and as supplemented by the March 2004 memorandum, remain unchanged in the Specifications.

66. Inventory Rating

The Inventory Rating has been changed from recording metric tons to recording the load rating factor.

APPRAISAL RATINGS

The appraisal ratings are used for the assessment of deficiency status. For some time, stakeholders have indicated that the rating systems used were not in conformance with the AASHTO policy on geometric design. The rating scale was revisited by the FHWA team and a 0 to 9 scale was unwarranted. The ratings were redefined using a 1 to 4 scale. This enables the FHWA to retain the ability to assign deficiency status (code 1) and determine deficiency points for the sufficiency rating calculations (codes 1, 2 and 3).

For each of the items contributing to deficiencies, the full extent of the impact of this redevelopment must be documented. Some of the changes are expected to increase the numbers of deficiencies caused by that factor; however, since other factors also contribute to the deficiencies, the net effect on the total number of deficiencies and the apportionment factors needs to be determined. This is being evaluated by the FHWA.

In redefining the rating scales, changes must also be made with respect to structural evaluation appraisal and waterway adequacy. In the existing guide employing the 0 to 9 scale, these items contribute to either structural deficiencies or functional obsolescence, depending on the rating. In the 0 to 4 scale approach, only codes of 1 contribute to deficiencies and it is thus difficult to use a single item to define either structural deficiencies or functional obsolescence. Thus, the structural evaluation appraisal ratings are proposed to only contribute to structural deficiencies while waterway adequacy is proposed to contribute only to functional obsolescence. The extent of this change must also be evaluated.

67. Structural Evaluation

In the current *Guide*, this is a calculated field which is currently based on a 0 to 9 scale. The 0 to 9 scale is extraneous thus has been redefined with the item calculated based on a 0 to 4 scale. The 1 to 4 scale has been defined to be in accordance with work being performed by AASHTO on LRFR. Load rating factors of 1 indicate that no restrictions are required. Inventory rating factors of 0.3, as a rule of thumb, is a lower limiting factor for truck loads. Any rating factor below this value, in general, is going to result in significant restrictions placed on truck traffic and a code of 1 will be assigned. Rating factor 3 is arbitrarily defined between the limits of 1 and 0.3. The codes are as follows:

- 4 – At or above desirable criteria
- 3 – Better than present minimum criteria
- 2 - At, or slightly better than, present minimum criteria
- 1 – Below present minimum criteria.

68. Deck Geometry

In the current *Guide*, this is a calculated field which is currently based on a 0 to 9 scale. The 0 to 9 scale is extraneous thus has been redefined with the item calculated based on a 0 to 4 scale.

The tables used to calculate this item were redefined based on values published in the current version of the *AASHTO Policy for Geometric Design of Highways and Streets*, otherwise known as the Green book. It must be emphasized, that this change, while bringing the values in line with AASHTO policy, will also result in a dramatic increase in the number of bridges that are deficient as a result of this item. As previously mentioned, the impact of the change on the number of deficiencies, however, is not known since there are combinatorial considerations that must be examined. Furthermore, the impact of this change on the apportionment factors also must be examined. These impacts are being evaluated by the FHWA.

The 0 to 4 scale is as follows:

- 4 – At or above desirable criteria
- 3 – Better than present minimum criteria
- 2 - At, or slightly better than, present minimum criteria
- 1 – Below present minimum criteria.

69. Underclearances, Vertical and Horizontal

ITEM REPLACED: In the current *Guide*, this is a calculated field which is currently based on a 0 to 9 scale. A number of different measures were considered in this item through the tables, such as vertical and horizontal underclearances and clearances to both railroads and roadways. These items were separated in the new *Guide* and the item is thus replaced by several addition clearance items. Furthermore, the 0 to 9 scale is extraneous thus has been redefined with the item calculated based on a 1 to 4 scale. For each of the items, this scale is as follows:

- 4 – At or above desirable criteria
- 3 – Better than present minimum criteria
- 2 - At, or slightly better than, present minimum criteria
- 1 – Below present minimum criteria.

As with other appraisal items, the full extent of the impact of these changes must be evaluated. This evaluation will be performed by the FHWA.

70. Bridge Posting

This item has been changed. In the *Guide*, the posting requirement and the relationship of the operating rating to the maximum legal load were maintained. In the specifications, coding is provided simply to determine whether or not the bridge is posted. This is a yes (Y) or no (N) field.

71. Waterway Adequacy

The waterway adequacy rating has been assigned as part of the inspection, based on the severity and probability of overtopping. The item has been traditionally rated using a 0 to 9 scale. This scale was determined to be extraneous and the existing tables were modified and changed to reflect the 1 to 4 scale, described as follows:

- 4 – At or above desirable criteria
- 3 – Better than present minimum criteria
- 2 - At, or slightly better than, present minimum criteria
- 1 – Below present minimum criteria.

For this item, when a bridge does not cross a waterway, a code of N is assigned. This is the same criteria as was employed in the Guide for structures not crossing waterway.

72. Approach Roadway Alignment

This item has been changed from a rating on a 0 to 9 scale to a rating on a 1 to 4 scale. Ratings from the existing tables were translated to the 1 to 4 scale, which is defined as follows:

- 4 – At or above desirable criteria
- 3 – Better than present minimum criteria
- 2 - At, or slightly better than, present minimum criteria
- 1 – Below present minimum criteria.

73. Not used – Noted as being reserved – Item Deleted

74. Not used – Noted as being reserved – Item Deleted

75. Type of Work

ITEM DELETED – The type of work was proposed for elimination by the team prior to release of the draft version for comment in 2005. This item was determined, however, to be required for the appraisal ratings in the existing *Guide*. However, as these appraisal ratings have been redefined, the type of work proposed is no longer necessary. As no other uses of the data have been identified, the item is recommended for deletion.

76. Length of Structure Improvement

ITEM DELETED – The length of structure improvement could be used in determining projected future costs; however, for national level estimating, this information can be obtained using other techniques, such as the deck area growth and unit costs. Furthermore, this item was proposed for elimination by the team prior to release of the draft version for comment in 2005. As no other uses of the data have been identified, the item is recommended for deletion.

77. Not used – Noted as being reserved – Item Deleted

78. Not used – Noted as being reserved – Item Deleted

79. Not used – Noted as being reserved – Item Deleted

80. Not used – Noted as being reserved – Item Deleted

81. Not used – Noted as being reserved – Item Deleted

82. Not used – Noted as being reserved – Item Deleted

- 83. Not used – Noted as being reserved – Item Deleted
- 84. Not used – Noted as being reserved – Item Deleted
- 85. Not used – Noted as being reserved – Item Deleted
- 86. Not used – Noted as being reserved – Item Deleted
- 87. Not used – Noted as being reserved – Item Deleted
- 88. Not used – Noted as being reserved – Item Deleted
- 89. Not used – Noted as being reserved – Item Deleted
- 90. Inspection Date

The format of the date is changed to include the day together with the month and year.

- 91. Designated Inspection Frequency

No coding changes are proposed.

- 92. Critical Feature Inspection

Critical feature inspection information and frequency was recorded in the Guide for fracture critical details, underwater inspection and other special inspections. Information is retained in the Specifications for inspection frequency on fracture critical details and underwater inspection. Binary yes/no field indicating whether the inspections are required are eliminated as this information may be culled from the frequency data. Information requirements for other special inspections are eliminated from the Specifications.

- 93. Critical Feature Inspection Date

As specified under critical feature inspections, information on other special inspections are eliminated. Inspection information will be retained only for fracture critical inspections and for underwater inspections. This information is maintained in separate fields and dates will be collected in MM/DD/YYYY format.

- 94. Bridge Improvement Cost

ITEM DELETED – This information is not currently used by the FHWA Office of Bridge Technology and was proposed for elimination by the team prior to the 2005 draft. It is recognized that there may be parties outside the FHWA Office of Bridge Technology that have a compelling reason for maintaining this information. If such needs are identified, the question of whether to retain the item will be revisited.

- 95. Roadway Improvement Cost

ITEM DELETED – This information is not currently used by the FHWA Office of Bridge Technology and was proposed for elimination by the team prior to the

2005 draft. It is recognized that there may be parties outside the FHWA Office of Bridge Technology that have a compelling reason for maintaining this information. If such needs are identified, the question of whether to retain the item will be revisited.

96. Total Project Cost

ITEM DELETED – This information is not currently used by the FHWA Office of Bridge Technology and was proposed for elimination by the team prior to the 2005 draft. It is recognized that there may be parties outside the FHWA Office of Bridge Technology that have a compelling reason for maintaining this information. If such needs are identified, the question of whether to retain the item will be revisited.

97. Year of Improvement Cost Estimate

ITEM DELETED – This item is coupled with the cost estimates in items 94 to 96, which are proposed to be deleted. This information is not currently used by the FHWA Office of Bridge Technology and was proposed for elimination by the team prior to the 2005 draft. It is recognized that there may be parties outside the FHWA Office of Bridge Technology that have a compelling reason for maintaining this information. If such needs are identified, the question of whether to retain the item will be revisited.

98. Border Bridge

a. Border Bridge State or Country Code

In the *Guide*, a three digit, compound code consisting of the State FIPS Code (2 digits) and the FHWA Region Code (one digit) was employed. The FHWA Region Codes are obsolete and no longer required. Thus, in these *Specifications*, the State Code was changed from a three digit code to a two digit code. The new State code can be obtained by truncating the last digit (the Region Code) of the existing code. This makes the NBI State code equivalent to the 2-digit Census FIPS codes.

In the *Guide*, the bordering State code was entered as a 3-digit code. This will now be entered as a 2-digit code in the *Specifications*. For international bridges bordering Canada and Mexico, the *Guide* employed codes of CAN and MEX respectively. In the *Specifications*, these codes have been changed to CN for Canada and MX for Mexico to accommodate the change to a 2-digit field.

b. Border Bridge Percent Responsibility

In the *Guide*, the border bridge percent responsibility was maintained as a two digit code indicating the percent responsibility of the *neighboring* State for maintenance. This code has been changed to a numeric, 3 digit code, termed as Border Bridge Responsibility in the *Specifications*. Border bridge responsibility indicates the percent responsibility of the State submitting the inspection record.

For instance, consider a border bridge spanning between New Jersey and Pennsylvania where New Jersey maintains 60 percent of the maintenance

responsibility for the structure (Pennsylvania thus with 40% maintenance responsibility). Both New Jersey and Pennsylvania will enter bridge inspection records indicating their respective responsibilities. (i.e. the record submitted by NJ will indicate 60% responsibility, while the record submitted by PA will indicate 40% responsibility).

99. Border Bridge Structure Number

No coding changes are proposed.

100. STRAHNET Highway Designation

No coding changes are proposed.

101. Parallel Structure Designation

ITEM DELETED – This item was proposed for deletion prior to the 2005 review and no arguments were presented for retaining the information. If compelling arguments for retaining the information are received, the question of whether or not the items should be deleted will be revisited.

102. Direction of Traffic

Code 3 in the Guide, which indicated two-way traffic on a one-lane bridge, has been eliminated. All other codes remain the same.

103. Temporary Structure Designation

ITEM DELETED – This item was proposed for deletion prior to the 2005 review and no arguments were presented for retaining the information. If compelling arguments for retaining the information are received, the question of whether or not the items should be deleted will be revisited.

104. Highway System of the Inventory Route

This item is renamed to NHS Designation and changed from a binary field of 0 and 1 for non-NHS and NHS respectively, to Y and N, indicating whether the structure is carrying a route on the NHS.

105. Federal Lands Highway

Codes 1 through 9 are unchanged. Code 0, which indicates that the federal-lands designation is not applicable, has been changed to N.

106. Year Reconstructed

The year reconstructed has been redefined as year rehabilitated. Reconstruction in the Guides was defined based upon the type of work performed, whether or not it meets current minimum standards, and whether it was eligible for funding under any of the Federal-aid funding categories. In the specifications, the criteria is expanded to rehabilitation, which is defined as work that is "extensive in scope" and defined "as major work required to restore the structural integrity and extend the useful life of a bridge as well as work to correct major safety

defects.” Work excluded from rehabilitation is nearly identical to the work excluded from reconstruction, except that emergency repair and retrofitting are only excluded when considered as ‘minor’.

107. Deck Structure Type

The deck structure type code has been changed from a one-digit code in the *Guide* to a two digit code in the *Specifications*. The coding change was made to accommodate the additional code of FRP Composite, which would currently be coded using the *Guide* using code 9 – Other. There are currently enough FRP decks in-place to warrant the additional code.

Code 1 through 8 are effectively unchanged but are now coded as 01 through 08 respectively. Code 9, which in the guide indicated other deck types, will be eliminated. FRP composites are coded as 10. Exodermic decks are to be coded as 11. Other codes are now indicated as 99.

Where decks are not applicable for the design type, such as for filled culverts and arches, a code of NA is used.

108. Wearing Surface/Protective System

For the wearing surface/protective system item, a compound, 3-digit field was employed where the first digit indicated the type of wearing surface, the second digit indicating the type of membrane, and the third digit indicating the type of deck projection. These items were separated into individual fields.

a. Type of Wearing Surface

The type of wearing surface item was renamed as additional deck surface. A code was added for micro-silica concrete and the items for monolithic and integral concrete were combined. The item was subsequently changed from a single-digit item to a two-digit item to avoid inconsistencies. The codes in the Guide and the new codes in the Specification are as follows:

Codes in the Guide	Codes in the Specification
1 – Monolithic Concrete 2 – Integral Concrete	11 – Concrete
3 – Latex concrete (or similar additive)	12 – Latex concrete (or similar additive)
4 – Low-slump concrete	13 – Low-slump concrete
	14 – Micro-silica concrete
5 – Epoxy Overlay	21 – Epoxy Overlay
6 – Bituminous	31 – Bituminous
7 – Wood or Timber	41 – Timber
8 – Gravel	51 – Gravel
9 – Other	99 – Other
0 – None	00 – None
N – Not applicable	NA – Not Applicable

b. Type of Membrane

Codes are provided for the type of membrane in the Guide. These codes reflect built-up, preformed fabric, epoxy and other membranes. Codes are also provided for unknown, none and not-applicable.

This item was simplified to simply indicate the presence of a membrane and not the type of membrane. Acceptable codes in the *Specifications* include Y – Yes, N- No and U – Unknown.

c. Deck Protection

The deck protection item was re-named as internal deck protection to reflect the purpose of the data collection more accurately. The original one-digit code was modified to two-digits in order to accommodate added items. Added items included FRP reinforcing, Stainless steel reinforcing, and Stainless-steel clad reinforcing. Considering the existing codes, the code for other-clad reinforcing is removed.

Codes in the Guide	Codes in the Specification
1 – Epoxy Coated Reinforcing	01 – Epoxy Coated Reinforcing
2 – Galvanized Reinforcing	02 – Galvanized Reinforcing
3 – Other Coated Reinforcing	
4 – Cathodic Protection	04 – Cathodic Protection
	05 – FRP reinforcing
6 – Polymer Impregnated	06 – Polymer Impregnated
7 – Internally Sealed	07 – Internally Sealed
8 – Unknown	08 – Unknown
	11 – Stainless steel reinforcing
	12 – Stainless steel clad reinforcing
9 – Other	99 – Other
0 – None	00 – None
N – Not applicable	NA – Not Applicable

109. Average Daily Truck Traffic

No coding changes are proposed.

110. Designated National Network

ITEM DELETED – This item was proposed for deletion prior to the 2005 review and no arguments were presented for retaining the information. If compelling arguments for retaining the information are received, the question of whether or not the items should be deleted will be revisited.

111. Pier or Abutment Protection (for Navigation)

Pier and abutment protection for navigation consists of 5 codes in the Guide:

- 1 – Navigation protection not required
- 2 – Navigation protection is in place and functioning
- 3 – Navigation protection is in place but in a deteriorated condition
- 4 – Navigation protection is in place but reevaluation of the design is suggested
- 5 – No navigation protection is present but reevaluation is required.

Code 1, which indicates that navigation protection is not required must be retained. Likewise, this item must indicate where the protection is required but not currently present. The remaining codes are redefined into a binary indicator of whether or not the codes meet currently accepted standards. This item is thus redefined as follows in the Specifications:

- 0 – Protection is required but none present
- 1 – Protection does not meet currently acceptable standards
- 2 – Protection meets currently acceptable standards
- N – Not applicable, or protection is not required.

112. NBIS Bridge Length

No coding changes have been proposed.

113. Scour Critical Bridges

This item has been renamed as scour vulnerability. No coding changes have been made.

114. Future Average Daily Traffic

ITEM DELETED – This item was proposed for deletion prior to the 2005 review and no arguments were presented for retaining the information. If compelling arguments for retaining the information are received, the question of whether or not the items should be deleted will be revisited.

115. Year of Future Average Daily Traffic

ITEM DELETED – This item was proposed for deletion prior to the 2005 review and no arguments were presented for retaining the information. If compelling arguments for retaining the information are received, the question of whether or not the items should be deleted will be revisited.

116. Minimum Navigation Vertical Clearance – Vertical Lift Bridge

ITEM REPLACED – The clearance items have been redeveloped and this item has been replaced by the with other clearance items. Add the note for navigation vertical clearance.

NEW ITEMS:

Substructure Items: Additional information is required on the substructure to permit the FHWA to report to Congress and to give additional insight on the types of substructures which contribute to substructure deficiencies. Furthermore, additional substructure information is required for vulnerability assessments at the system level. Substructure information is proposed in a format similar to that employed for superstructures (i.e. main/approach format proposed). The following substructure items are proposed:

- Abutment Material Type
- Abutment Design Types
- Abutment Foundation Type
- Main Pier/Bent Material Type
- Main Pier/Bent Design Type
- Main Pier/Bent Foundation Type
- Approach Pier/Bent Material Type
- Approach Pier/Bent Design Type
- Approach Pier/Bent Foundation Type

Additional information on dates of special inspections is proposed. This information is useful to evaluate conformance with NBIS regulations. Information proposed is as follows:

- Fracture Critical Member Inspection Date
- Underwater Inspection Date

The information collected for posting loads is proposed to be enhanced by the addition of the following items:

- Load Rating Date
- Posting Load Rating Factor
- Controlling Vehicle for Posting Load Rating Factor

Finally, additional information is required for scour and the following scour-related item is proposed for collection.

- Scour Plan of Action