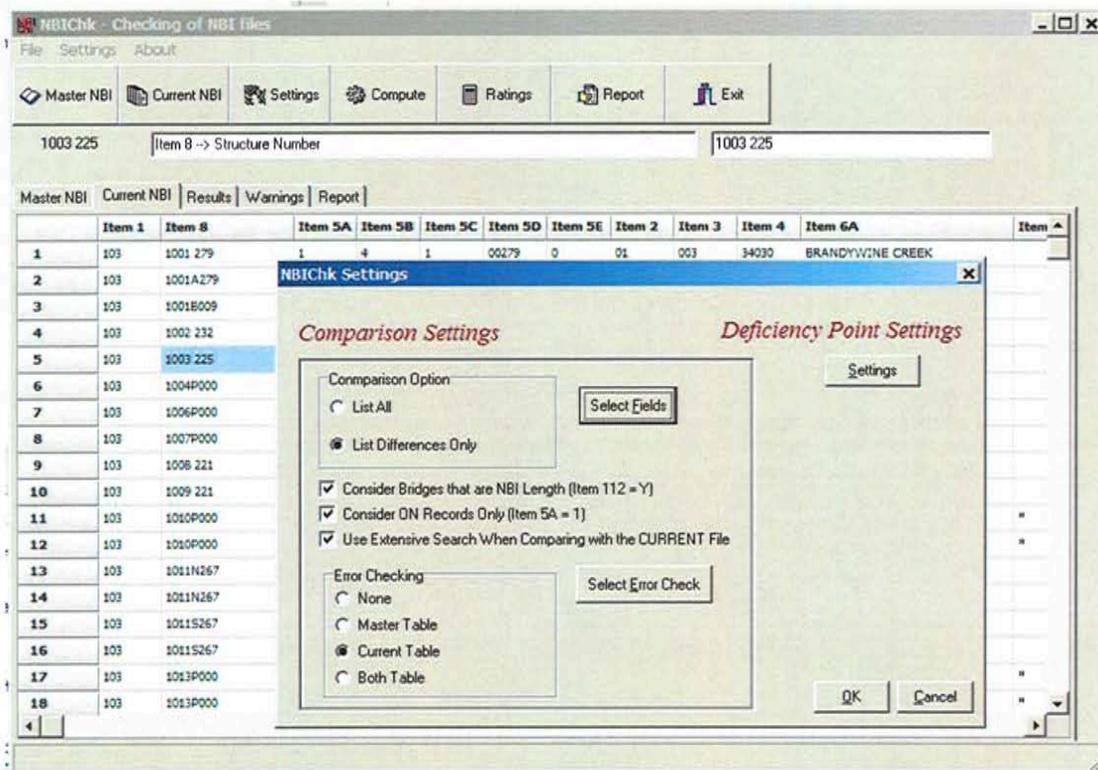


NBI Database Quality Assurance Checks

DELAWARE DEPARTMENT OF TRANSPORTATION'S NBI DATABASE QUALITY ASSURANCE PROGRAM

On yearly basis, Delaware DOT (DelDOT) conducts data checks on the NBI tape as a part of DelDOT's Quality Assurance Program. These checks are conducted using an in-house developed program called **NBICHk** (Current Version 1.6).



The program performs following types of checks:

1. Comparison with Previous Year's NBI Tape to Document Changes for each of the NBI Item.
2. Supplemental Data Checks

Comparison with Previous Year's NBI Tape to Document Changes

The program allows comparison with any year's NBI Tape. Any field(s) can be marked for comparison; a report for each bridge is produced documenting differences or changes. Some of the changes (Item 92A, Item 92B, Item 113 etc.) are then verified against the master list.

The report also includes list bridges that are now either included the NBI Tape or removed from the NBI Tape.

Supplemental Data Checks

The program also performs Supplemental Data Checks (Specific Data checks can marked for checking); a report for each bridge is produced documenting errors.

| No. | Check Item | Includ |
|-----|---|--------|
| 1 | ITEM 113 - ITEM 42B IS 1 THRU 4 -- SO ITEM 113 MUST BE N. | Y |
| 2 | ITEM 13A - ITEM 13A CANNOT CONTAIN A BLANK WHEN CODED See Below | Y |
| 3 | ITEM 26 - ITEM 12 = 1, SO ITEM 26 MUST BE 01,02,06,11,12, OR 14 | Y |
| 4 | ITEM 27 - YEAR BUILT CENTURY IS NOT VALID. | Y |
| 5 | ITEM 41 - ITEM 103 IS = T AND ITEM 41 IS NOT = D, E, OR P. | Y |
| 6 | ITEM 42B - ITEM 28B = 0 -- SO ITEM 42B MUST BE 0,2,3,5,7, OR 9. | Y |
| 7 | ITEM 42B - ITEM 28B > 0 -- SO ITEM 42B MUST BE 1, 4, 6, OR 8. | Y |
| 8 | ITEM 42B - ITEM 71 IS NUMERIC - 42B MUST BE = 5, 6, 7, 8, 9, OR 0 | Y |
| 9 | ITEM 43B - ITEM 51 = 0 SO ITEM 43B MUST BE CODED 19. | Y |
| 10 | ITEM 43B - ITEM 52 = 0 SO ITEM 43B MUST BE CODED 19. | Y |
| 11 | ITEM 43B - ITEM 62 IS NUMERIC -- SO ITEM 43B MUST BE 19. | Y |
| 12 | ITEM 44A - THE APPROACH KIND OF MATERIAL CODE IS NOT NUMERIC. | Y |
| 13 | ITEM 44B - THE APPROACH TYPE OF DESIGN CODE IS NOT VALID. | Y |
| 14 | ITEM 49 - ITEM 112 = Y -- SO ITEM 49 MUST BE > OR = 6.1 METERS | Y |
| 15 | ITEM 51 - ITEM 51 MUST NOT BE GREATER THAN ITEM 52. | Y |
| 16 | ITEM 58 - ITEM 43B = 19 -- SO ITEM 58 MUST BE N. | Y |

Currently following data checks are performed.

- Item 113 – Scour Critical Bridge must be N when Item 42B (Type of Service Under Bridge) is 1 thru 4
- Item 13A (LRS Inventory Route) can not contain a blank when coded
- Item 26 (Functional Class of Inventory Route) must be 01,02,06,11,12, OR 14 when Item 12 (Base Highway Network) equals 1
- Item 27 (Year Built). It validates Year Built Century.
- Item 103 (Temporary Structure Designation) is coded as T when Item 41 (Structure Open/Posted/Closed) is not D, E or P

- Item 42A (Type of Service on Bridge) can not be Null or Blank
- Item 42B (Type of Service Under Bridge)
 - If Item 28B (Lanes Under Bridge) is zero, Item 42B must be 0,2,3,5,7, OR 9
 - If Item 28B (Lanes Under Bridge) greater than zero, Item 42B must be 1,4,6, OR 8
 - If Item 71 (Waterway Adequacy) is a numeric, Item 42B must be 5, 6, 7, 8, 9, OR 0
- Item 43B (Type of Design/Construction)
 - If Item 51 is coded as 0, Item 43B must be coded 19
 - If Item 52 is coded as 0, Item 43B must be coded 19
 - If Item 62 is numeric, Item 43B must be coded 19
- Item 44A (Approach Kind Material/Design) should be Numeric
- Item 44B (Approach Type of Design) should be Numeric
- Item 49 (Structure Length) should be greater than or equal to 6.1 meters when Item 112 is coded as Y
- Item 51 (Bridge Roadway Width – Curb to Curb) must not be greater than Deck Width, out to out.
- Item 51 (Bridge Roadway Width) can not be Null or Blank
- Item 52 (Deck Width out to out) can not be Null or Blank
- Item 58 (Deck) must be N when Item 43B is 19
- Item 59 (Superstructure) must be N when Item 43B is 19
- Item 5D (Route Number) is not Entered
- Item 60 (Sub Structure) must be N when Item 43B is 19
- Item 62 (Culverts) must be Numeric when Item 43B is 19
- Item 64 (Inventory Rating) must not be greater than the Item 66 (Operating Rating)
- Item 66 (Operating Rating) must be 0 when Item 41 is either E or K
- Item 75A (Type of Proposed Work) when coded should be 31, 32, 33, 34, 35, 36, 37 or 38

- Item 96 (Total Project Cost) must be greater than 0 when Item 75A (Type of Proposed Work) is greater than 0
- Validation Check on Item 98 (Neighboring State)
- Item 30 (Year of ADT) is in the future
- Item 48 (Length of Maximum Span) must not be greater than Item 49 (Structure Length)
- Item 65 (Inventory Rating) must be coded 1 through 8
- Item 91 (Inspection Frequency) is coded as greater than 48
- Item 92A (Fracture Critical Inspection) - Validation Check on Item 92A (Fracture Inspection Code and Inspection Frequency)
- Item 92B (Underwater Inspection) - Validation Check on Item 92B (Underwater Inspection Code and Inspection Frequency)
- Item 92C (Other Special Inspection) - Validation Check on Item 92C (Other Special Inspection Code and Inspection Frequency)
- Item 22 (Owner)
 - Item 22 can not be blank or Null
 - Item 22 can not be 80, 26, 27, 60 thru 76
- Item 21 (Maintenance Responsibility)
 - Item 21 can not be blank or Null
 - Item 21 and Item 22 do not match
- Item 112 (NBIS Bridge Length)
 - Can not be Null or Blank
 - Any bridge with Item 112 equal to N should not be included
- Item 49 (Structure Length)
 - Item 49 can not be blank or Null
 - Item 112 should be N for Item 49 \leq 5.8 meters
 - Culverts or Arches $>$ 6.1 m should have Item 112 equal to Y
- Item 90 (Inspection Date)
 - Any Null or Blank entries
 - Bridges with inspection dates greater than 27 months old
- Item 91 (Inspection Frequency)
 - Any Null or Blank entries

- For bridges with Item 64 (Operating Rating) coded "< 327" metric tons (36 tons) is Item 91 coded "< 24" months or is Item 92C (Other Special Inspection) coded. This should be the case unless Item 41 (Open, Posted or Closed) is coded "K" (bridge closed to traffic).
 - For bridges with Item 70 (Bridge Posting) coded "<5" (rating below legal loads) is Item 91 coded "< 24" months or is Item 92C (Other Special Inspection) coded. This should be the case unless Item 41 (Open, Posted or Closed) is coded "K" (bridge closed to traffic).
- Item 90 (Inspection Date)
 - Any Null or Blank entries
 - Bridges with inspection dates greater than 27 months old
 - Item 93A (Fracture Critical Details) check for bridges with inspection dates greater than 63 months old.
 - Item 93B (Underwater Inspection) check for bridges with inspection dates greater than 63 months old.
 - Item 64 (Operating Rating)
 - Any Null or Blank entries
 - Bridges coded "< 327" metric tons (36 tons) should not have Item 41 (Open, Posted or Closed) coded "A" (open without restriction).
 - Bridges coded "< 027" metric tons (3 tons) and if so Item 41 (Open, Posted or Closed) should only be coded "D" (temporary shoring to allow unrestricted traffic), "E" (temporary structure in place), or "K" (bridge closed to all traffic).
 - Any coded "< 027" metric tons (3 tons) should be changed to "000" per the FHWA coding guide.
 - Item 70 (Bridge Posting)
 - Any blank or null entries
 - Bridges coded "<5" (rating below legal loads) should have Item 41 (Open, Posted or Closed) coded as either "B" (missing posting signs), "K" (bridge closed to traffic), "P" (posted for load) or "R" (posted for other restriction).
 - Bridges coded "5" (rating equal or above legal loads) and Item 64 (Operating Rating) coded "< 327" metric tons (36 tons) have an item\items incorrectly coded.
 - Item 41 (Structure Open, Posted or Closed)
 - Any Null or Blank entries
 - Item 113 (Scour Critical Bridges)
 - Any Null or Blank entries

Delaware Code