Bridge Geometry Field Measurements

Project ID:	Contract:	Region:
Highway: Over/under	County:	Structure Number:
	Prime Contractor:	Structure Contractor:
Cardinal Direction:	***please use cardinal direction when taking the measurements*	

Project Engineer:	Telephone:
Recorded by:	Date:

Submit completed form to BOS Regional Bridge Engineer before opening road to traffic. Description titles are linked to SNBI explanations and examples. (Measure in cardinal direction)

SNBI Item	Description *(Note Feature name in this area) =>*	Value of Feature	Value of Feature
B.G.05	Bridge Width Out-to-Out		
B.G.06	Bridge Width Curb-to-Curb		
B.G.07	Left Curb or Sidewalk Width		
B.G.08	Right Curb or Sidewalk Width		
B.G.09	Approach Roadway Width		
B.G.13	Maximum Bridge Height		
B.H.12	Highway Maximum Usable Vertical Clearance		
B.H.13	Highway Minimum Vertical Clearance		
B.H.14	Highway Minimum Horizontal Clearance, Left		
B.H.15	Highway Minimum Horizontal Clearance, Right		
B.H.16	Highway Maximum Usable Surface Width		
B.RR.02	Railroad Minimum Vertical Clearance		
B.RR.03	Railroad Minimum Horizontal Offset		
B.SP.07	Span Protective System		
B.SP.10	Wearing Surface		
B.SP.11	Deck Protective System		
B.SB.05	Substructure Protective System		

Bridge Geometry Field Measurements, Form Page 2

Project ID:	Contract:	Bridge ID:

Submit completed form to BOS Regional Bridge Engineer before opening road to traffic. Description titles are linked to SNBI explanations and examples. (Measure in cardinal direction)

SNBI Item (from Page 1)	Value of Feature	Value of Feature	Value of Feature	Value of Feature	Value of Feature
B.G.05					
B.G.06					
B.G.07					
B.G.08					
B.G.09					
B.G.13					
B.H.12					
B.H.13					
B.H.14					
B.H.15					
B.H.16					
B.RR.02					
B.RR.03					
B.SP.07					
B.SP.10					
B.SP.11					
B.SB.05					

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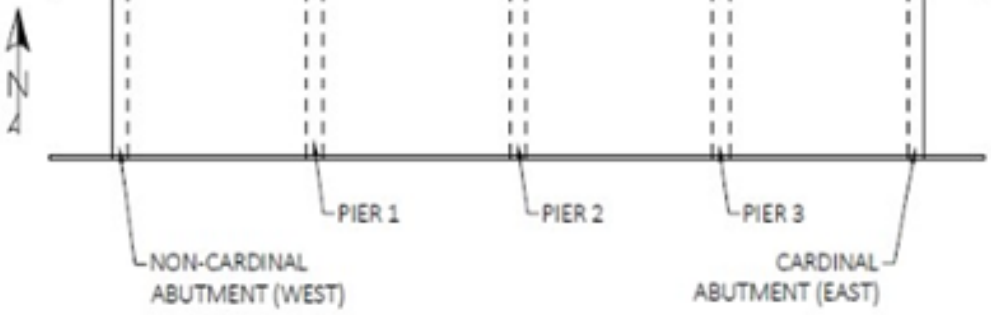
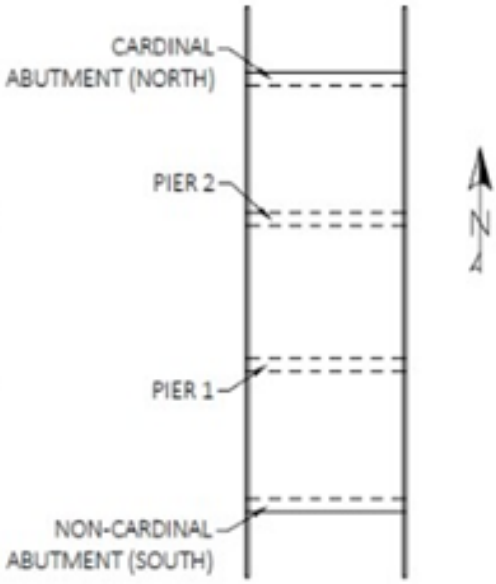
Cardinal Direction





Revision Date:1-29-2025

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Bridge Width Out-to-Out

Format	Frequency	Item ID
N (4,1)	I	B.G.05

Specification	Commentary
Report the minimum out-to-out width measured perpendicular to the centerline of the roadway to the nearest tenth of a foot. For multiple (double) deck bridges that are inventoried as one bridge, measure all levels, and report the sum of the measurements to account for the total width carried on the bridge. For bridges under fill, measure the width from out-to-out of the headwalls or barrel ends. For sidehill bridges, measure the out-to-out structure width. For bridges that carry multiple types of service, for example highway, pedestrian, and railroad, measure the out-to-out width that encompasses all service types.	For bridges under fill, the reported value can be limited to the width of the roadway section over the bridge for unusual situations where the bridge continues far beyond the roadway cross-section, and a lesser width would likely be constructed for a replacement project. For bridges under fill, in which the features that define the out-to-out width are not parallel, report the minimum out-to-out width.

Examples

Report measurement A.

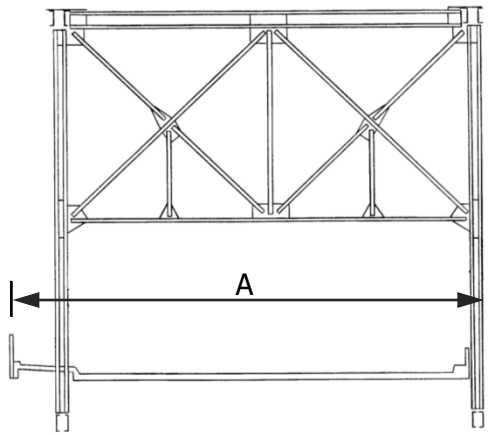

Figure 34. Cross-section view of a through truss bridge.

Report measurement A.

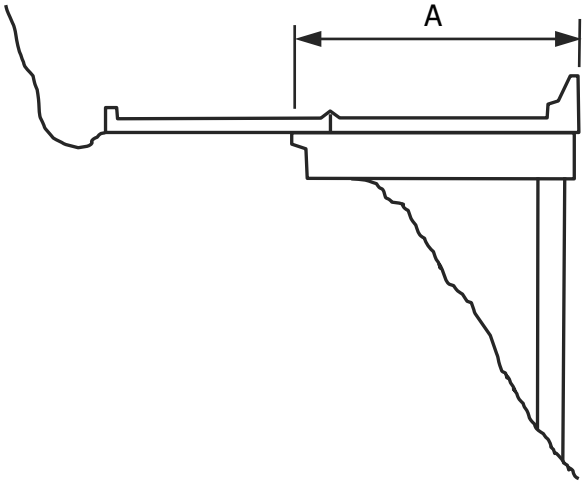

Figure 35. Cross-section view of a sidehill bridge.

Report measurement A.

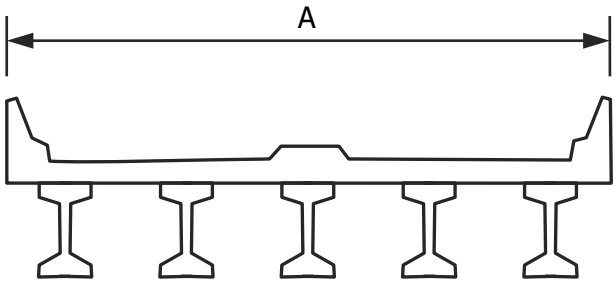

Figure 36. Cross-section view of a multi-girder bridge.

Report measurement A.

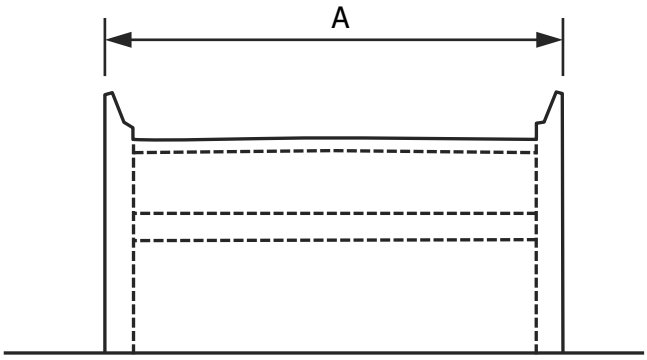

Figure 37. Cross-section view of a filled arch bridge or culvert under fill with headwalls.

Report measurement A.

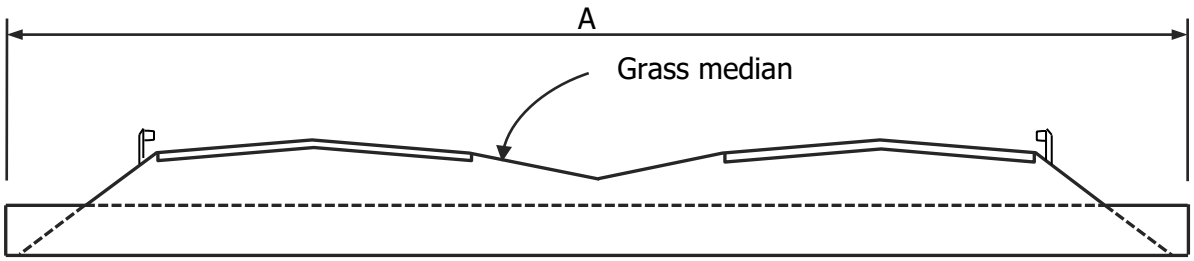

Figure 38. Cross-section view of a pipe culvert under fill.

Report measurement A.

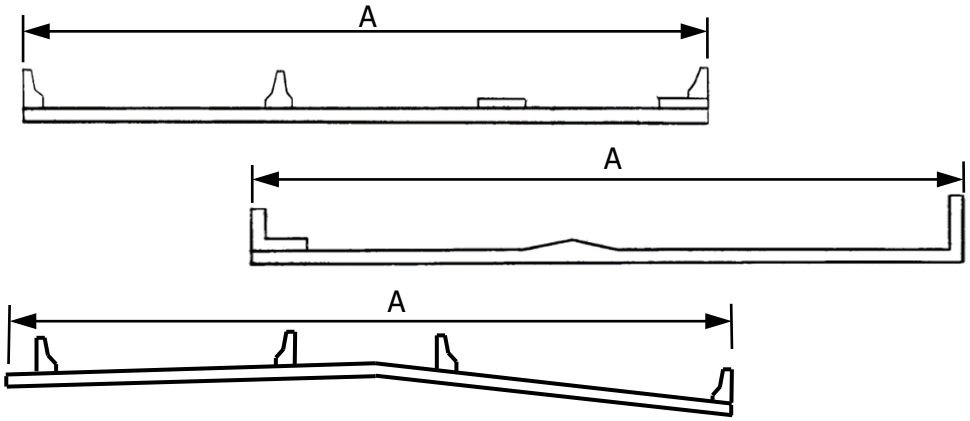

Figure 39. Cross-section views of various bridge decks with medians.

Report measurement A.

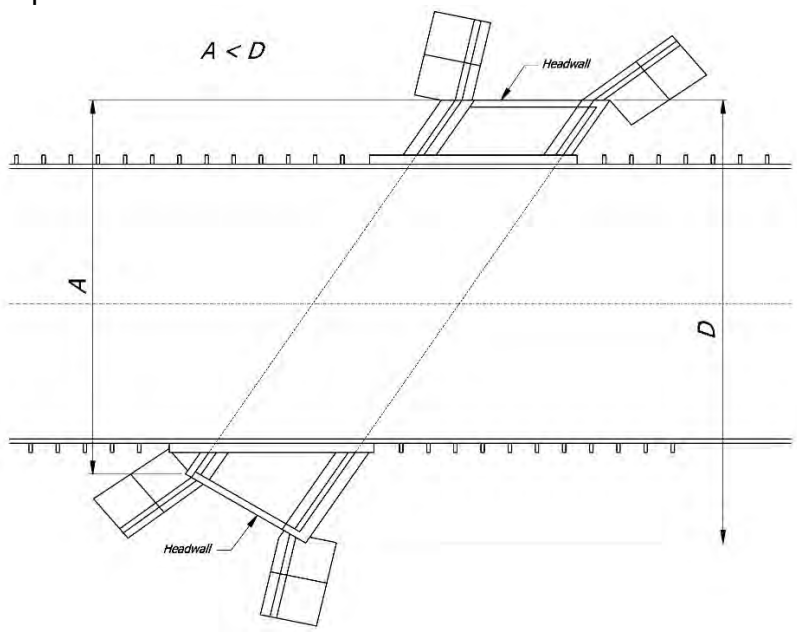

Figure 40. Plan view of a bridge with non-parallel fascias.

Examples Continued – Bridge Width Out-to-Out

Report measurement A.

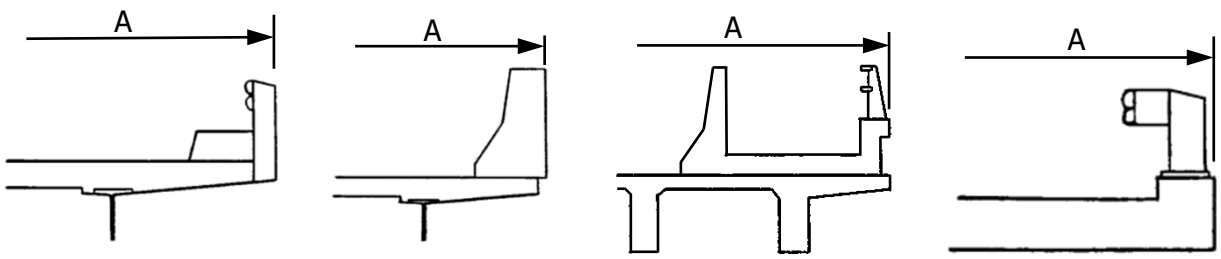

Figure 41. Partial cross-section views of various bridge decks with railings.

Report measurement A.

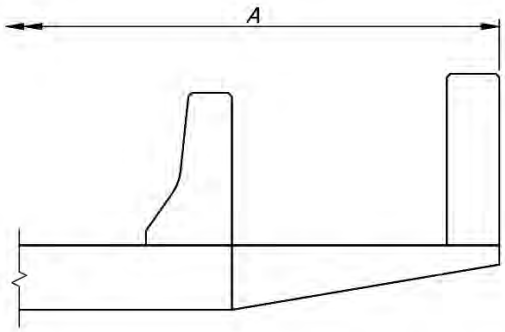

Figure 42. Cross-section view of a sidewalk retrofit.

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Bridge Width Curb-to-Curb

Format	Frequency	Item ID
N (4,1)	I	B.G.06

Specification	Commentary
Report the sum of the most restrictive minimum usable distances for all roadways carried by the bridge. Measure the distance on the bridge perpendicular to the centerline of the roadway between curbs or rails to the nearest tenth of a foot. Exclude from the usable distance measurement medians, sidewalks, structurally inadequate shoulders, and other non-mountable areas. The measurement for this item shall be compatible with the measurements used for Item B.H.08 *(Lanes On Highway)*, Item B.G.09 *(Approach Roadway Width)*, and Item B.H.09 *(Annual Average Daily Traffic)*. For multiple (double) deck bridges that are inventoried as one bridge, measure all levels, and report the sum of the most restrictive minimum usable distances carried by the bridge. For sidehill bridges measure the actual full curb-to-curb roadway width. For bridges that carry multiple types of service, for example highway, pedestrian, and railroad, report the usable distance that serves the highway service as denoted by curb or barrier separation, or other delineation that separates the service types.	Usable roadway width includes the width of traffic lanes and the widths of shoulders. Shoulders must be contiguous with the traveled way and must be structurally adequate for all weather and traffic conditions consistent with the facility carried. Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not to be considered a shoulder for this item. Refer to agency policy for when and where stabilized shoulders are used. When it is not readily known if stabilized construction details were used, the presence of rutting, heaving, water retention, or other distress may be used as indicators that the shoulder is not stabilized. For bridges under fill, the usable roadway width crossing the bridge is commonly the same value reported for Item B.G.09 *(Approach Roadway Width)*. A barrier or curb greater than 6 inches high may be considered non-mountable for these specifications.

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Examples – Bridge Width Curb-to-Curb

Report measurement A.

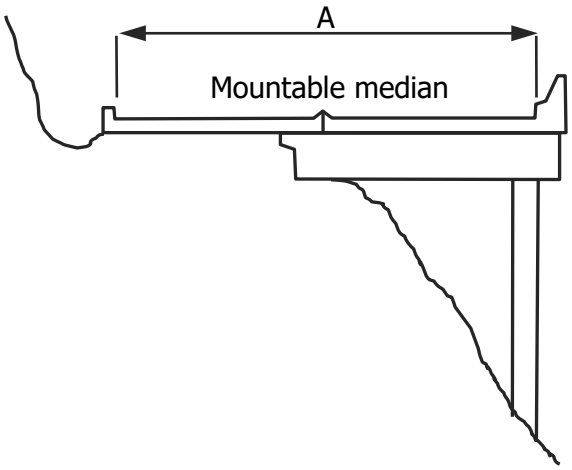

Figure 43. Cross-section view of a sidehill bridge.

Report measurement A.

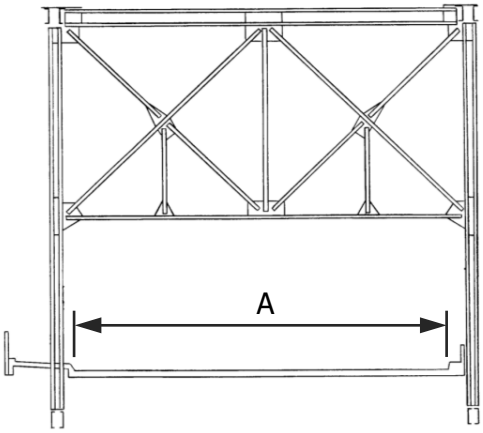

Figure 44. Cross-section view of a through truss bridge.

Report measurement A.

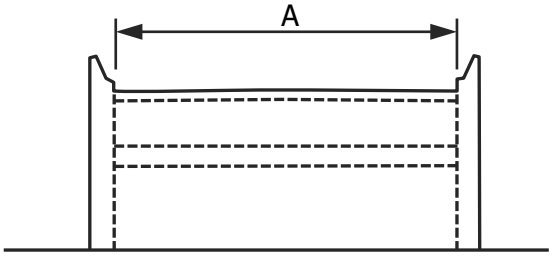

Figure 45. Cross-section view of a filled arch bridge or culvert under fill with headwalls.

Report measurement A.

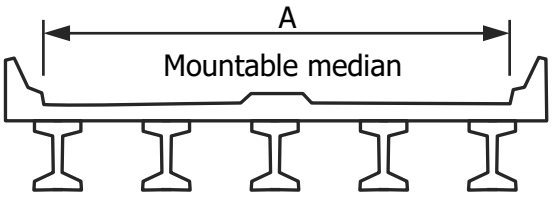

Figure 46. Cross-section view of a multi-girder bridge.

Report the sum of A+B.

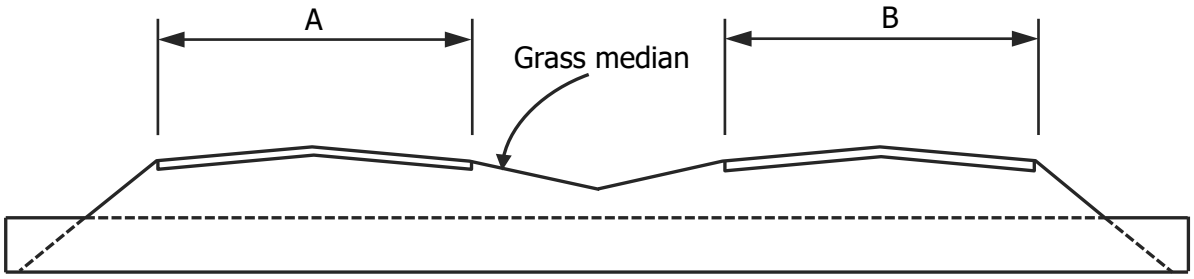

Figure 47. Cross-section view of a pipe culvert under fill.

Report measurement A.

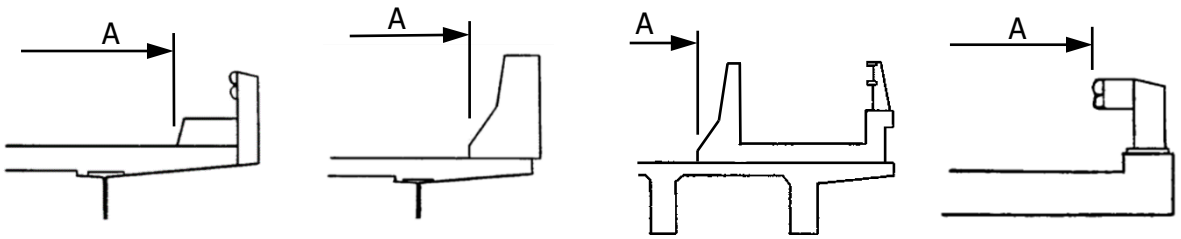

Figure 48. Partial cross-section views of various bridge decks with railings.

Report measurement A.

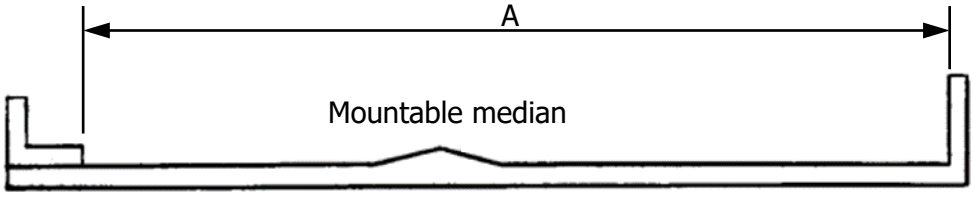

Figure 49. Cross-section view of a bridge deck with mountable median.

Report the sum of A+B+C.

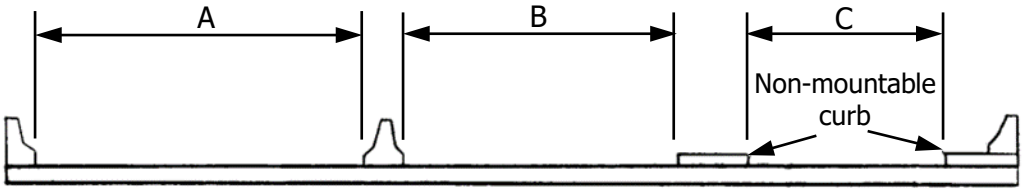

Figure 50. Cross-section view of a bridge deck with non-mountable curb and median barrier.

Report the sum of A+B.

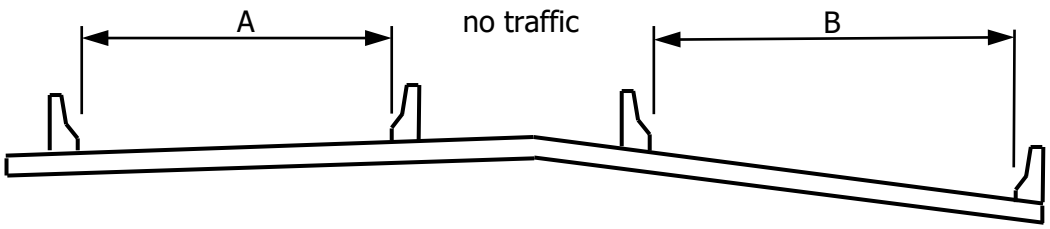

Figure 51. Cross-section view of a bridge deck with multiple median barriers.

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Left Curb or Sidewalk Width

Format	Frequency	Item ID
N (3,1)	I	B.G.07

Specification	Commentary
Report the minimum width of the left curb or sidewalk to the nearest tenth of a foot from the face of bridge rail to the face of curb. Measure the width perpendicular to the centerline of the roadway. Report 0.0 when the face of the curb does not extend beyond the face of the bridge rail. Report 0.0 when there is no left curb or sidewalk.	Left and right are determined based on the direction of the inventoried route carried by the bridge, commonly west to east or south to north. When a defined longitudinal joint exists between the curb and the sidewalk, such as a granite curb and concrete sidewalk, measure the width from the face of bridge rail to the face of the granite curb.

Examples

Report measurement C.

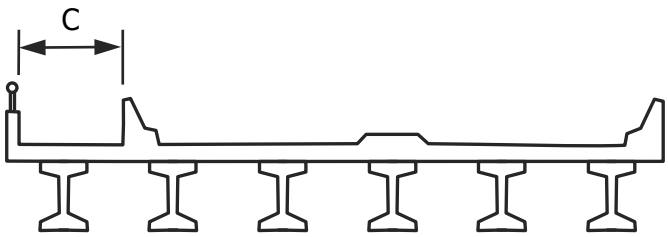

Figure 52. Cross-section view of a multi-girder bridge.

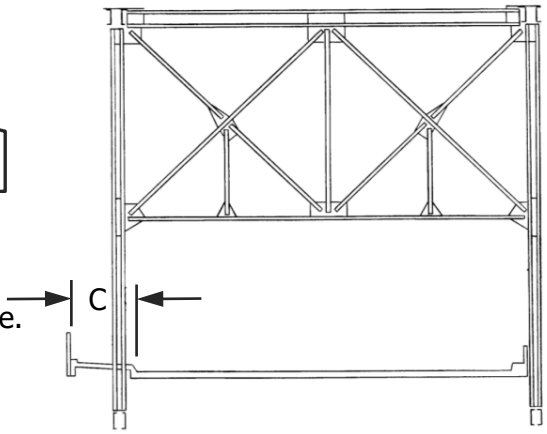

Figure 53. Cross-section view of a through truss bridge.

Report measurement C.

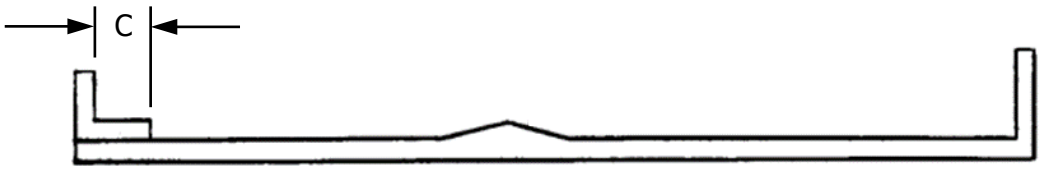

Figure 54. Cross-section view of a slab bridge.

Report measurement C.

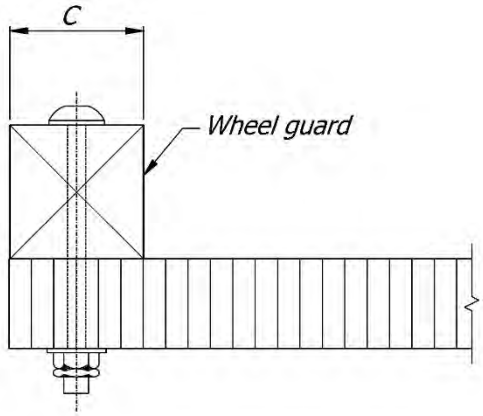

Figure 55. Cross-section view of a timber wheel guard.

Report measurement C.

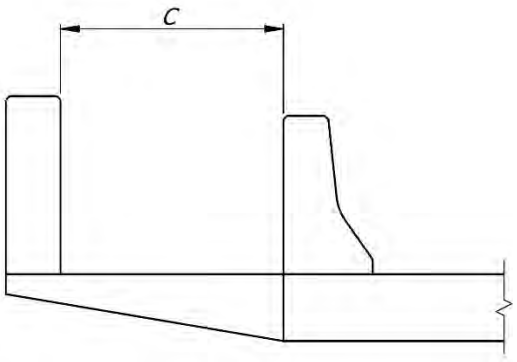

Figure 56. Cross-section view of a sidewalk retrofit.

Report measurement C.

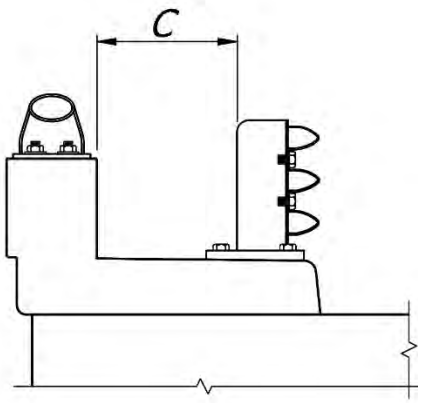

Figure 57. Cross-section view of a sidewalk retrofit.

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Right Curb or Sidewalk Width

Format	Frequency	Item ID
N (3,1)	I	B.G.08

Specification	Commentary
Report the minimum width of the right curb or sidewalk to the nearest tenth of a foot from the face of bridge rail to the face of curb. Measure the width perpendicular to the centerline of the roadway. Report 0.0 when the face of the curb does not extend beyond the face of the bridge rail. Report 0.0 when there is no right curb or sidewalk.	Right and left is determined based on the direction of the inventoried route carried by the bridge, commonly west to east or south to north. When a defined longitudinal joint exists between the curb and the sidewalk, such as a granite curb and concrete sidewalk, measure the width from the face of bridge rail to the face of the granite curb.

Examples

Report measurement C.

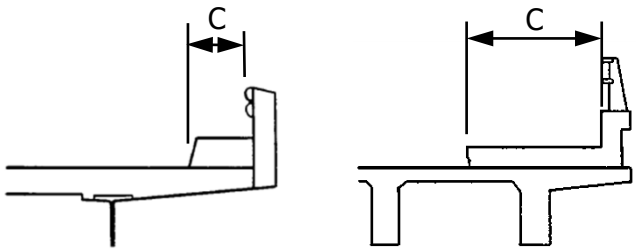

Figure 58. Partial cross-section views of various bridge decks with railings.

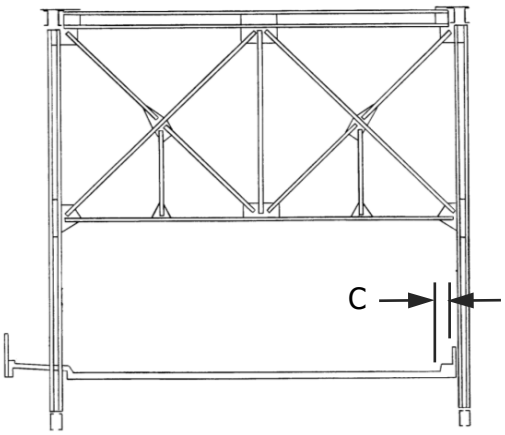

Figure 59. Cross-section view of a through truss bridge.

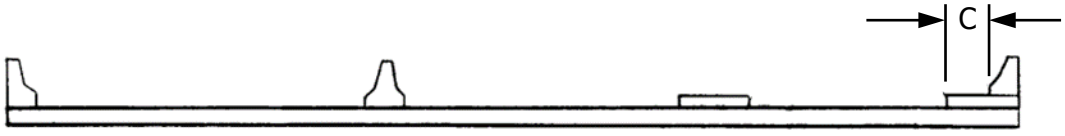

Figure 60. Cross-section view of a slab bridge with various medians.

Examples Continued – Right Curb or Sidewalk Width

Report measurement C.

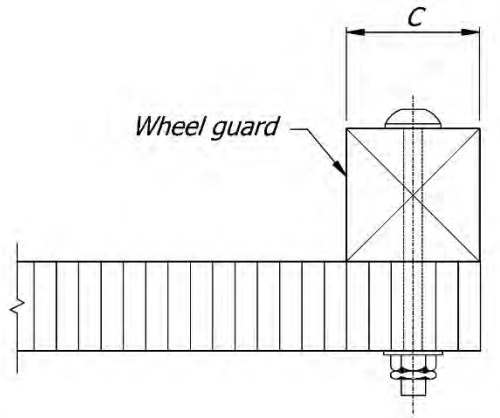

Figure 61. Cross-section view of a timber wheel guard.

Report measurement C.

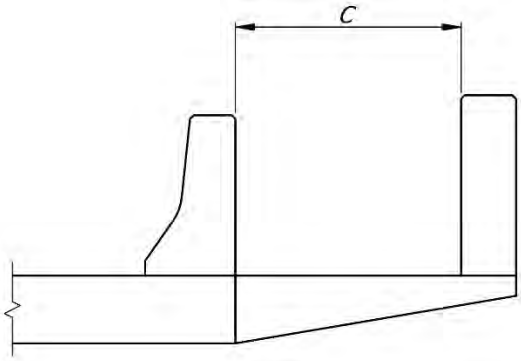

Figure 62. Cross-section view of a sidewalk retrofit.

Report measurement C.

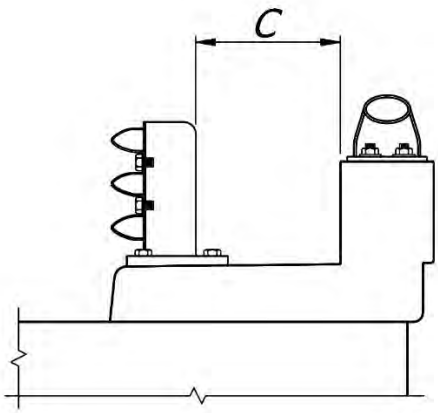

Figure 63. Cross-section view of a sidewalk retrofit.

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Approach Roadway Width

Format	Frequency	Item ID
N (4,1)	I	B.G.09

Specification	Commentary
Report the minimum usable approach roadway width measured to the nearest tenth of a foot. Measure the distance perpendicular to the centerline of the roadway between curbs or rails that is representative of the approach roadway within 100 feet of the bridge. Exclude from the usable distance measurement: medians, sidewalks, and other protected areas with non-mountable curbs or barriers. Report the lesser of the two approach roadway widths for bridges that carry two-way traffic. Report the width at the approach end for bridges that carry one-way traffic.	Usable roadway width includes the width of traffic lanes and the width of shoulders. Shoulders must be contiguous with the traveled way and must be structurally adequate for all weather and traffic conditions consistent with the facility carried. Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not to be considered a shoulder for this item. Refer to agency policy for when and where stabilized shoulders are used. When it is not readily known if stabilized construction details were used, the presence of rutting, heaving, water retention, or other distress may be used as indicators that the shoulder is not stabilized. A curb greater than 6 inches high may be considered non-mountable for these specifications.

Examples

Both roadways are carried on one bridge. Report the sum of measurements A and B.

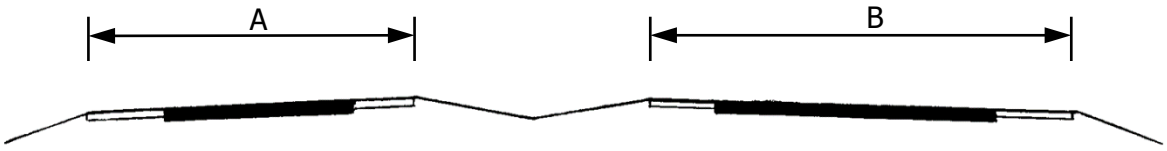

Figure 64. Cross-section view of two approach roadways that are carried across one bridge.

Examples Continued – Approach Roadway Width

Mainline and Ramp are both carried on one bridge. Report the sum of measurements A and B.

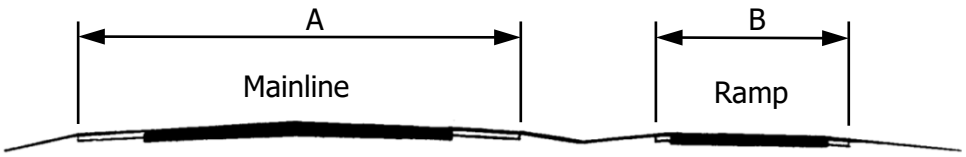

Figure 65. Approach roadway cross-section view for a mainline and a ramp that are carried across one bridge.

Mainline and Ramp are carried on separate bridges.

- Report measurement A for the Mainline bridge.
- Report measurement B for the Ramp bridge.

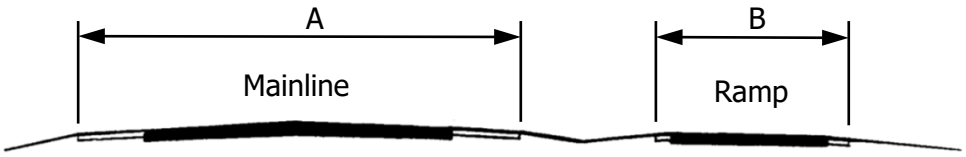

Figure 66. Approach roadway cross-section view for a mainline and a ramp that are carried across separate bridges.

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Maximum Bridge Height

Format	Frequency	Item ID
N (4,0)	I	B.G.13

Specification	Commentary
Record the maximum height from top of deck to ground line or water surface elevation, whichever yield the largest value, rounded to the nearest foot.	For double-deck bridges inventoried as one bridge, measure from top of deck of the lower deck. For double-deck bridges inventoried as two bridges, measure from the top of deck of the inventoried bridge. Ground line represents dry terrain, pavement, or waterway bottom. Use the water surface elevation at the time the value for this item is established. This item may be estimated by field observation or from plans when it is not practical or is infeasible to measure, or height is more than 30 ft. This item does not need to be updated due to fluctuations in water surface elevation.

Example

Bridge carries SR170 over Felix Creek and County Trail. Report 27.

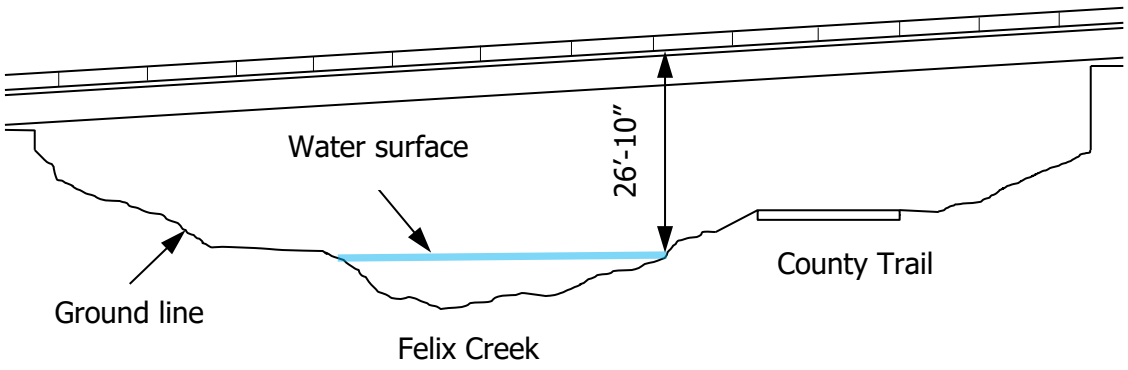

Figure 74. Profile view of a bridge over a creek and trail.

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Highway Maximum Usable Vertical Clearance

Format	Frequency	Item ID
N (3,1)	EI	B.H.12

Specification	Commentary
Report the minimum vertical clearance for the highway feature reported in Item B.F.01 *(Feature Type),* measured over the 10-foot-wide envelope of the traveled part of the highway, that provides for the maximum usable clearance envelope, rounded down to the nearest tenth of a foot. Measure the vertical clearance plumb from the deck or highway surface to the lowest bridge member restriction, appurtenance (signs, utilities, etc.) attached to the bridge, or other structure. Report 99.9 when the clearance is 100 feet or greater or no restriction exists above the highway.	This item identifies the maximum height of a notional 10-foot wide vehicle that can pass on the highway feature(s) reported in Item B.F.01 *(Feature Type)*. This information is sometimes used for preliminary military routing. The data may not represent the absolute minimum clearance over the highway feature. Refer to Item B.H.13 *(Highway Minimum Vertical Clearance)* for the absolute minimum clearance. The traveled part of the highway feature does not include shoulders. These data may be different than the posted vertical clearance due to agency vertical clearance posting policies and procedures. These data are not sufficient for permit routing as the location of the 10-foot-wide envelope that provides for the maximum usable clearance is not reported. For a double decked bridge inventoried as one bridge, report this information for each highway feature on each level of the bridge. Update field measurements when alterations are made to the bridge or highway that affect the previously measured clearance. Reporting this item is optional for highway features below the bridge that do not carry NHS routes as identified in Item B.H.03 *(NHS Designation)*. Clearances greater than 30 feet may be estimated.

Back to Form | Example – Highway Maximum Usable Vertical Clearance

The bridge has a 13′-9″ maximum usable vertical clearance. Report 13.7.

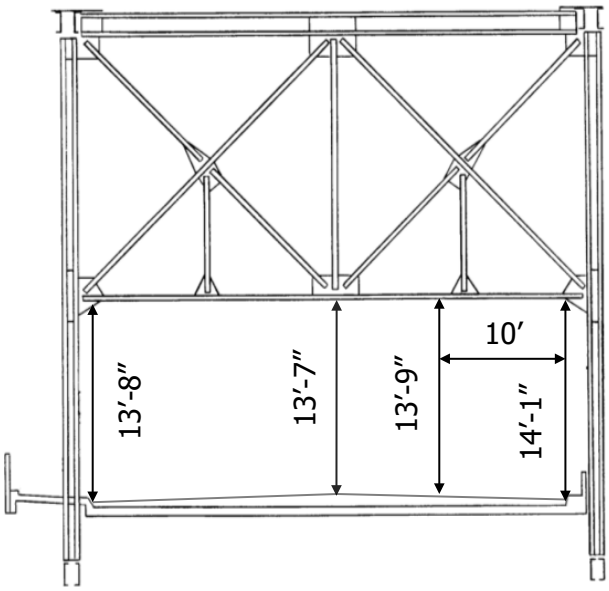

Figure 81. Cross-section view of through truss bridge showing vertical clearances.

The bridge carries a highway with no vertical clearance restrictions. Report 99.9.

Arthur Road passes below the bridge and has an 18′-5″ maximum usable vertical clearance. SR70 also passes below the bridge and has a 19′-11″ maximum usable vertical clearance.

- Report 18.4 for the Arthur Road highway feature.
- Report 19.9 for the SR70 highway feature.

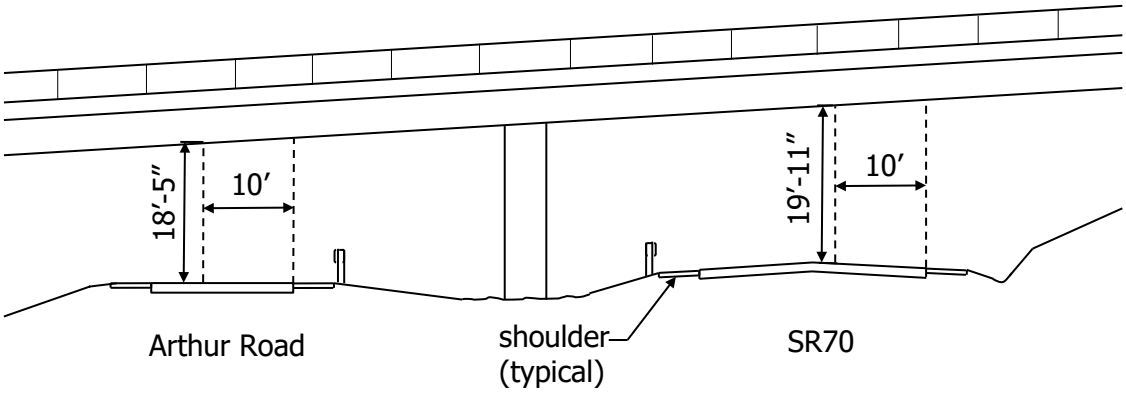

Figure 82. Elevation view with two separate highway features passing below the bridge.

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Highway Minimum Vertical Clearance

Format	Frequency	Item ID
N (3,1)	EI	B.H.13

Specification	Commentary
Report the minimum vertical clearance measured over the highway feature reported in Item B.F.01 *(Feature Type)*, rounded down to the nearest tenth of a foot. Measure the vertical clearance plumb from the deck or highway surface (including paved or stabilized shoulders) to the lowest bridge member restriction, appurtenance (signs, utilities, etc.) attached to the bridge, or other structure. Report 99.9 when the clearance is 100 feet or greater or no restriction exists above the highway.	Several measurements may need to be made to determine the minimum vertical clearance. However, only the minimum measurement is reported. Shoulders must be contiguous with the traveled way and must be structurally adequate for all weather and traffic conditions consistent with the facility carried. Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not to be considered a shoulder for this item. Refer to agency policy for when and where stabilized shoulders are used. When it is not readily known if stabilized construction details were used, the presence of rutting, heaving, water retention, or other distress may be used as indicators that the shoulder is not stabilized. These data may be different than the posted vertical clearance due to agency vertical clearance posting policies and procedures. Update field measurements when alterations are made to the bridge or highway that affect the previously measured clearance. Clearances greater than 30 feet may be estimated.

Examples – Highway Minimum Vertical Clearance

The bridge has a 13′-7″ minimum vertical clearance. Report 13.5.

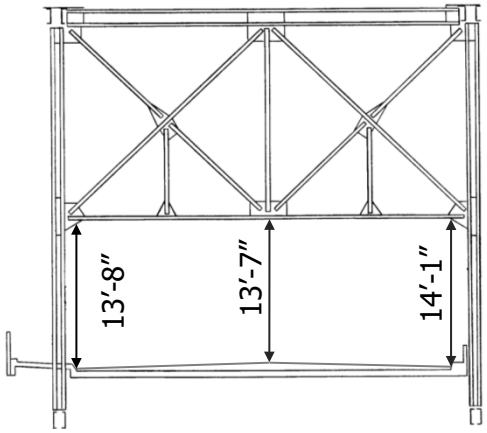

Figure 83. Cross-section view of a through truss bridge showing minimum vertical clearance.

The bridge carries a highway with no vertical clearance restrictions. Report 99.9.

Two highway features below the bridge. Arthur Road passes below the bridge and has an 18′-3″ minimum vertical clearance. SR70 also passes below the bridge and has a 19′-9″ minimum vertical clearance.

- Report 18.2 for the Arthur Road highway feature.
- Report 19.7 for the SR70 highway feature.

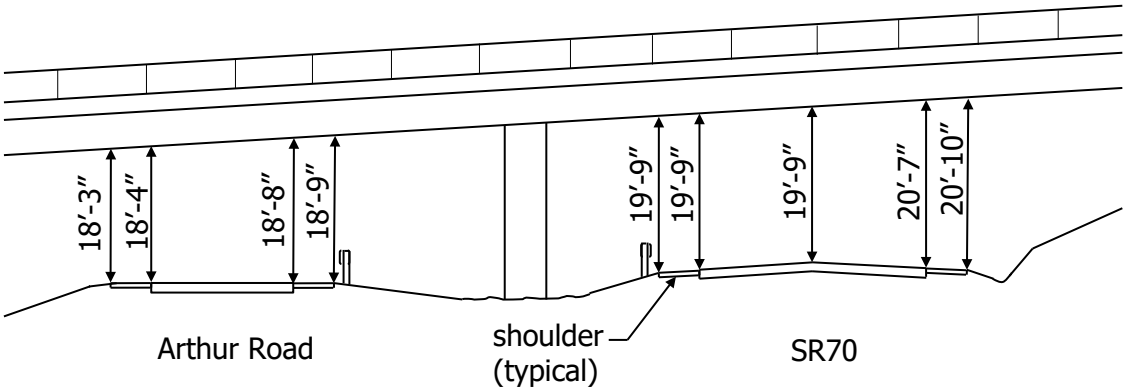

Figure 84. Elevation view with two separate highway features passing below the bridge.

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Highway Minimum Horizontal Clearance, Left

Format	Frequency	Item ID
N (3,1)	I	B.H.14

Specification	Commentary
Report the minimum horizontal clearance on the left, for the highway feature reported in Item B.F.01 *(Feature Type)*, rounded down to the nearest tenth of a foot. Measure from the left edge line of the highway (excluding shoulders, turn lanes, acceleration, or deceleration lanes) in the direction of travel to the nearest substructure unit, rigid barrier, oncoming traffic lane, or toe of slope that is steeper than 1 to 3 (vertical to horizontal). Report 99.9 when the clearance is 100 feet or greater. Report 0 when the highway is a two-way highway that is not divided at the bridge. Do not report this item for highway feature(s) carried on the bridge.	This item provides data for the highway feature(s) reported in Item B.F.01 *(Feature Type)* that pass below the bridge. Highways undivided at the bridge are reported as 0 due to the adjacent oncoming traffic lane which provides no horizontal clearance to the left. Reinforced concrete and masonry traffic safety features are considered rigid barriers; metal and timber railings are not considered rigid barriers. Clearances greater than 30 feet may be estimated.

Examples

Highway feature below the bridge carries 1-way traffic, looking in the direction of travel. Report 20.0.

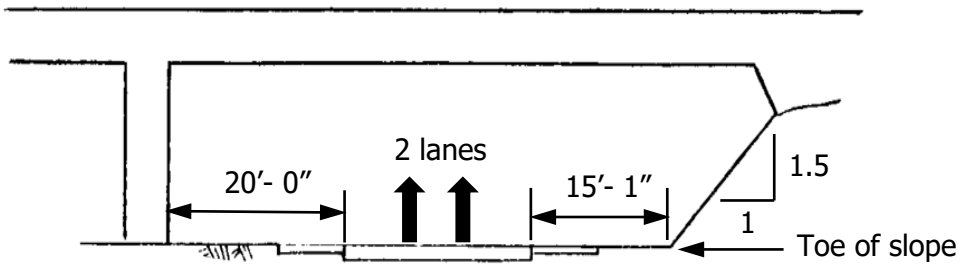

Figure 85. Bridge elevation view of horizontal clearances for a 2-lane highway with 1-way traffic below the bridge.

 Examples Continued – Highway Minimum Horizontal Clearance, Left

Highway feature below the bridge carries two-way traffic. Report 0.

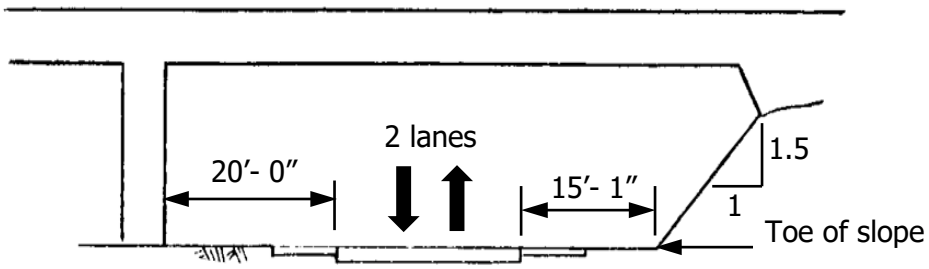

Figure 86. Bridge elevation view of horizontal clearances for a 2-lane highway with 2-way traffic below the bridge.

Two highway features below the bridge for a highway that is divided at the bridge. One highway feature carries 1-way traffic southbound and one carries 1-way traffic northbound.

- Report 18.0 for the southbound highway feature.
- Report 19.0 for the northbound highway feature.

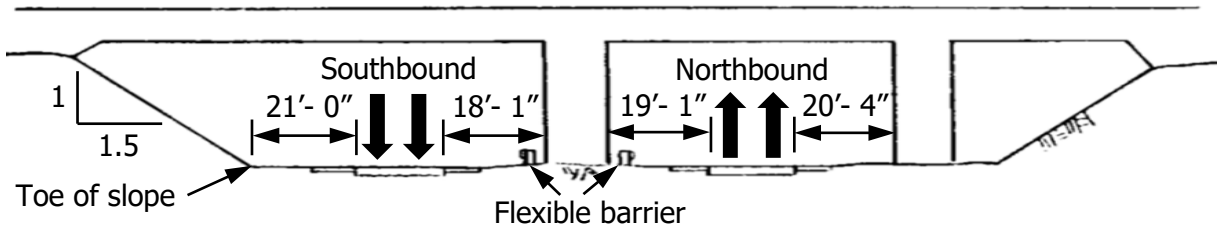

Figure 87. Bridge elevation view of horizontal clearances for separate southbound and northbound highway features below the bridge, with flexible barriers.

Two highway features below the bridge for a highway that is divided at the bridge. One highway feature carries 1-way traffic eastbound and one carries 1-way traffic westbound.

- Report 35.5 for the eastbound highway feature.
- Report 35.5 for the westbound highway feature.

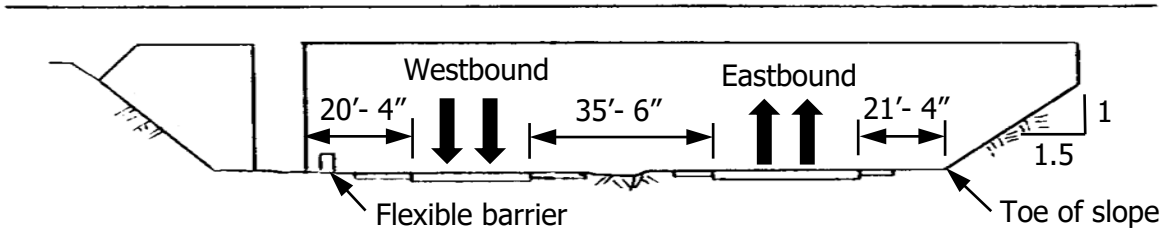

Figure 88. Bridge elevation view of horizontal clearances for separate westbound and eastbound highway features below the bridge, with flexible barrier.

Examples Continued – Highway Minimum Horizontal Clearance, Left

Highway feature below the bridge carries 1-way ramp traffic, looking in the direction of travel. Report 14.5.

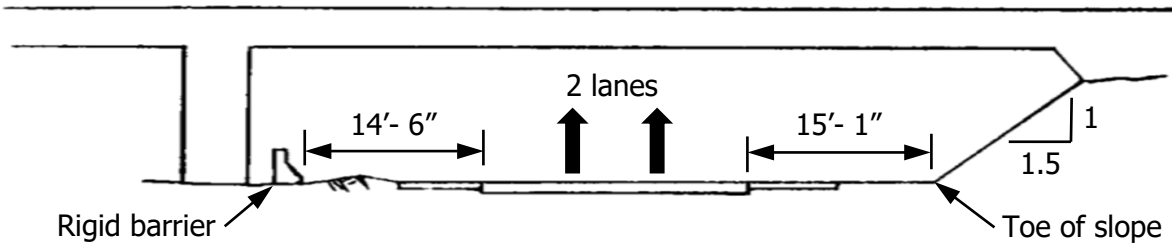

Figure 89. Bridge elevation view of horizontal clearances for a 2-lane, 1-way highway feature below the bridge, with a rigid barrier.

Highway feature below the bridge carries 1-way mainline traffic and 1-way ramp traffic, looking in the direction of travel. Report 20.0.

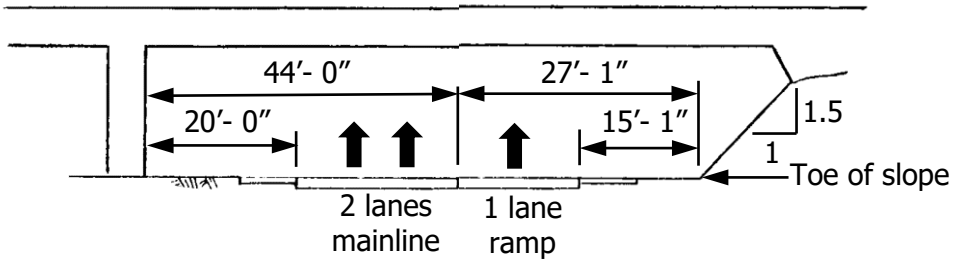

Figure 90. Bridge elevation view of horizontal clearances for a highway feature below the bridge carrying mainline and ramp.

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Highway Minimum Horizontal Clearance, Right

Format	Frequency	Item ID
N (3,1)	I	B.H.15

Specification	Commentary
Report the minimum horizontal clearance on the right, for the highway feature below the bridge reported in Item B.F.01 *(Feature Type)*, rounded down to the nearest tenth of a foot. Measure from the right edge line of the highway (excluding shoulders, turn lanes, acceleration, or deceleration lanes) in the direction of travel to the nearest substructure unit, rigid barrier, oncoming traffic lane or toe of slope that is steeper than 1 to 3 (vertical to horizontal). Report 99.9 when the clearances are 100 feet or greater. Do not report this item for highway feature(s) carried on the bridge.	This item provides data for the highway feature(s) reported in Item B.F.01 *(Feature Type)* that pass below the bridge. Reinforced concrete and masonry traffic safety features are considered rigid barriers; metal and timber railings are not considered rigid barriers. Clearances greater than 30 feet may be estimated.

Examples

Highway feature below the bridge carries 1-way traffic, looking in the direction of travel. Report 15.0.

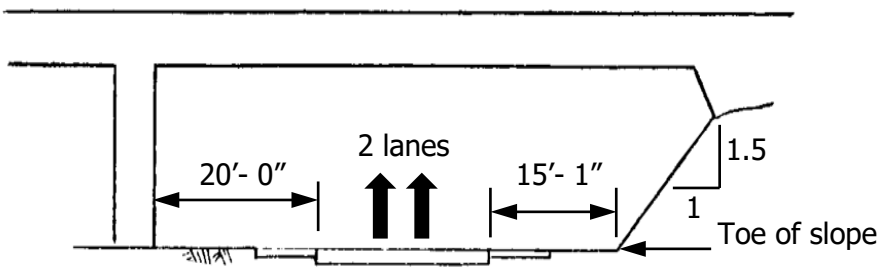

Figure 91. Bridge elevation view of horizontal clearances for a 2-lane highway feature with 1-way traffic below the bridge.

Examples Continued – Highway Minimum Horizontal Clearance, Right

Highway feature below the bridge carries two-way traffic. Report 15.0.

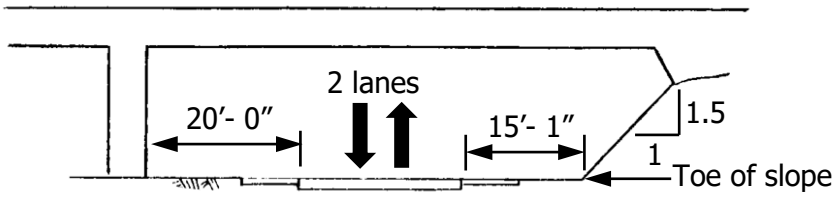

Figure 92. Bridge elevation view of horizontal clearances for a 2-lane highway feature with 2-way traffic below the bridge.

Two highway features below the bridge for a highway that is divided at the bridge. One highway feature carries 1-way traffic southbound and one carries 1-way traffic northbound.

- Report 21.0 for the southbound highway feature.
- Report 20.3 for the northbound highway feature.

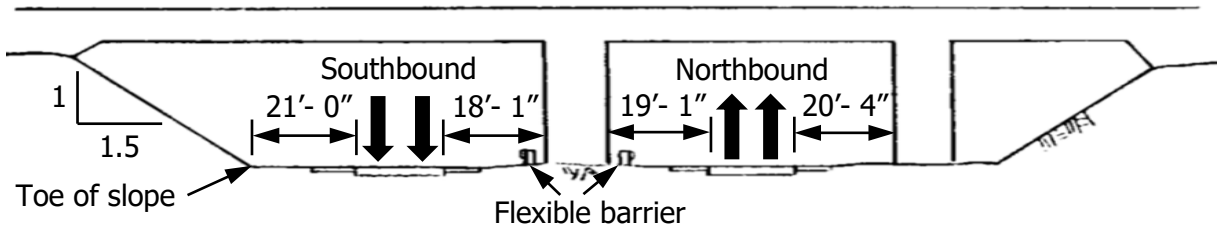

Figure 93. Bridge elevation view of horizontal clearances for separate southbound and northbound highway features below the bridge, with flexible barriers.

Two highway features below the bridge for a highway that is divided at the bridge. One highway feature carries 1-way traffic eastbound and one carries 1-way traffic westbound.

- Report 21.3 for the eastbound highway feature.
- Report 20.3 for the westbound highway feature.

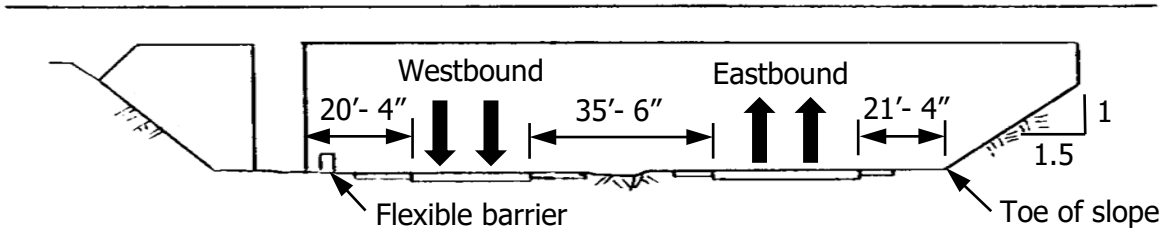

Figure 94. Bridge elevation view of horizontal clearances for separate westbound and eastbound highway features below the bridge, with a flexible barrier.

 Examples Continued – Highway Minimum Horizontal Clearance, Right

Highway feature below the bridge carries 1-way ramp traffic, looking in the direction of travel. Report 15.0.

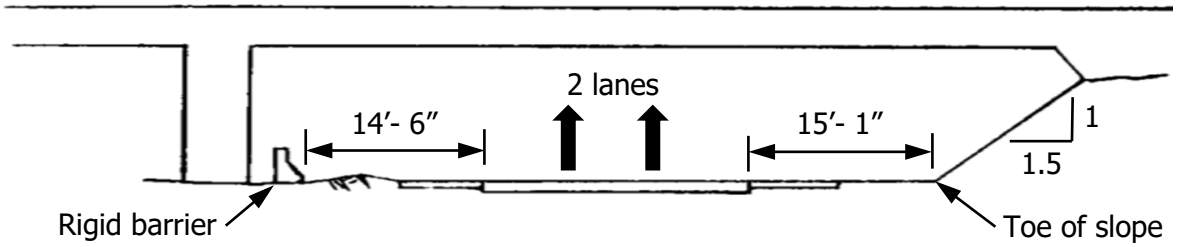

Figure 95. Bridge elevation view of horizontal clearances for a 2-lane, 1-way highway feature below the bridge, with a rigid barrier.

Highway feature below the bridge carries 2-way traffic. Report 14.5.

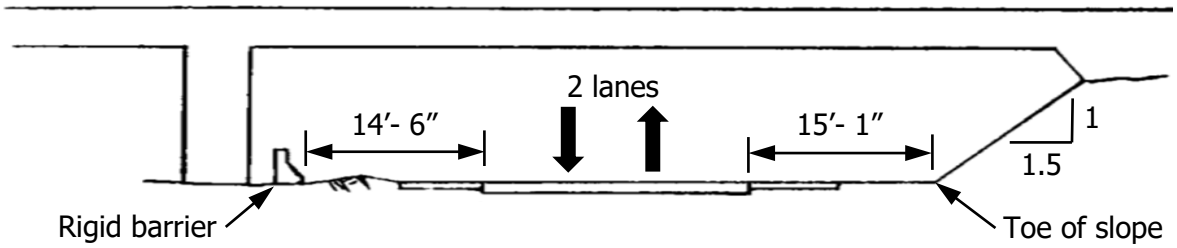

Figure 96. Bridge elevation view of a 2-lane, 2-way highway feature below the bridge, with a rigid barrier.

Highway feature below the bridge carries 1-way mainline traffic and 1-way ramp traffic, looking in the direction of travel. Report 15.0.

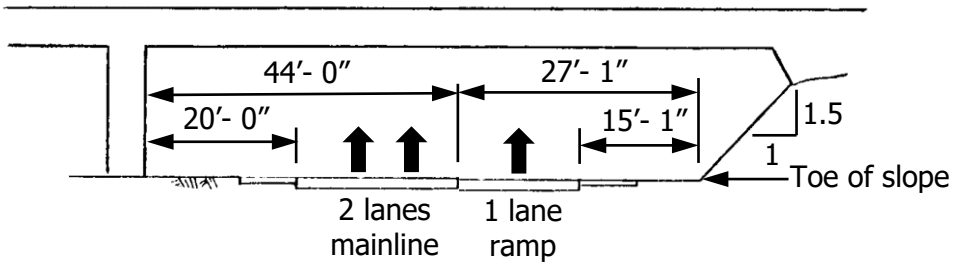

Figure 97. Bridge elevation view of horizontal clearances for highway feature carrying mainline and ramp traffic below the bridge.

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Highway Maximum Usable Surface Width

Format	Frequency	Item ID
N (3,1)	I	B.H.16

Specification	Commentary
Report the maximum usable surface width for the highway feature reported in Item B.F.01 *(Feature Type)* that passes below or is carried on the bridge, rounded down to the nearest tenth of a foot. Measure the width perpendicular to the centerline of the highway (including paved or stabilized shoulders). Report 99.9 when the surface width is 100 feet or greater.	Shoulders are included when they are contiguous with the traveled way and structurally adequate for all weather and traffic conditions consistent with the facility carried. Unstabilized grass or dirt, with no base course, flush with and beside the traffic lane is not considered a shoulder for this item. Refer to agency policy for when and where stabilized shoulders are used. When it is not readily known if stabilized construction details were used, the presence of rutting, heaving, water retention, or other distress may be used as indicators that the shoulder is not stabilized.

Commentary Continued

Flush (striped) and mountable medians are not considered restrictions.

A curb greater than 6 inches high may be considered non-mountable for these specifications.

Use the least restrictive configuration when movable rigid barriers are used to accommodate reversible lanes for non-construction-related applications.

Reporting this item is optional for highway features below the bridge that do not carry NHS routes as identified in Item B.H.03 *(NHS Designation)*.

Examples

Two highway features below the bridge. One highway feature carries eastbound traffic and one carries westbound traffic.

- Report 34.6 for the eastbound highway feature.
- Report 42.4 for the westbound highway feature.

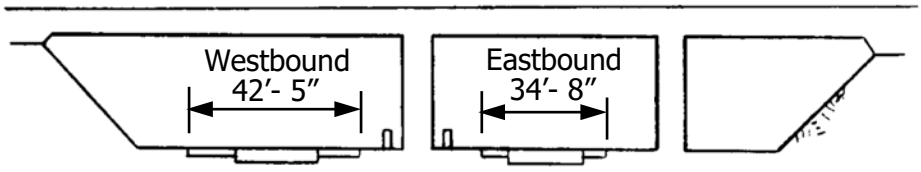

Figure 98. Bridge elevation view of two separate highway features below the bridge.

One highway feature carried on the bridge. Highway feature carries 2-way traffic that is not divided at the bridge. Report measurement A.

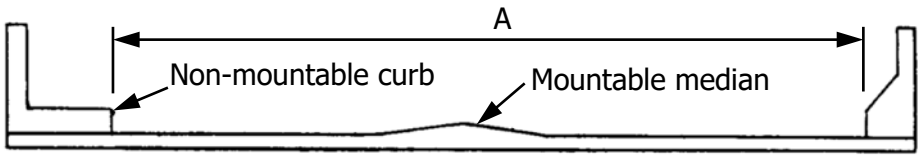

Figure 99. Cross-section view of a highway feature carried on the bridge with a mountable median.

Two highway features carried on the bridge. Highway 1 (H01) and Highway 2 (H02) are divided at the bridge by the non-mountable median.

- Report measurment A for H01.
- Report measurement B for H02.

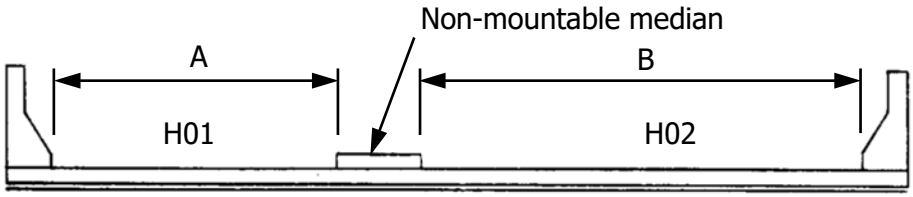

Figure 100. Cross-section view of two highway features carried on the bridge with a non-mountable median.

Two highway features carried on the pipe culvert under fill. Highway 1 (H01) and Highway 2 (H02) are divided at the bridge.

- Report measurement A for H01.
- Report measurement B for H02.

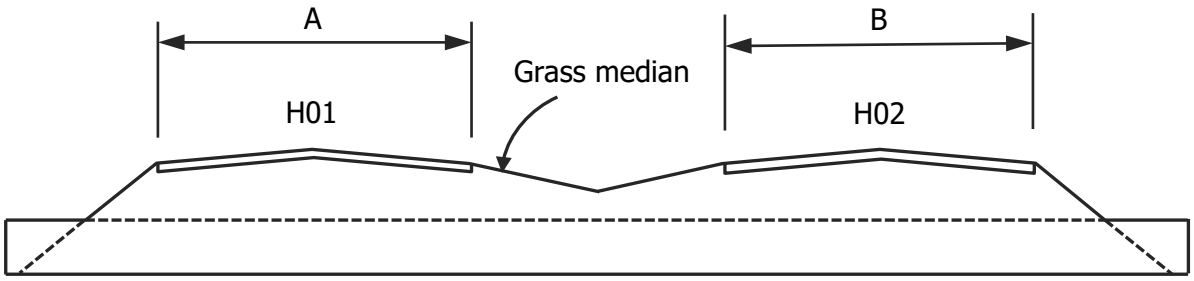

Figure 101. Cross-section view of two highway features carried on the pipe culvert under fill with a grass median.

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Railroad Minimum Vertical Clearance

Format	Frequency	Item ID
N (3,1)	EI	B.RR.02

Specification	Commentary
Report the minimum vertical clearance for the railroad feature reported in Item B.F.01 *(Feature Type)*, rounded down to the nearest tenth of a foot. Measure plumb from the top of rails to the lowest bridge restriction or appurtenance (signs, utilities, etc.) attached to the bridge. Appurtenances attached to the bridge that serve only a railroad purpose, such as catenary systems, are excluded from the measurement and do not reduce the vertical clearance measurement. Report 99.9 when the clearance is 100 feet or greater. Report this item only when Item B.F.02 *(Feature Location)* is B.	Several measurements may need to be made to determine the minimum vertical clearance for each railroad feature when one or more railroad tracks pass below the bridge. However, only the minimum measurement is reported. Update measurements when alterations are made to the bridge or railroad tracks that affect the previously measured clearance. Clearances greater than 30 feet may be estimated.

Examples

Two railroad tracks below the bridge that both carry freight and passenger service (i.e. one railroad feature). Report 31.2.

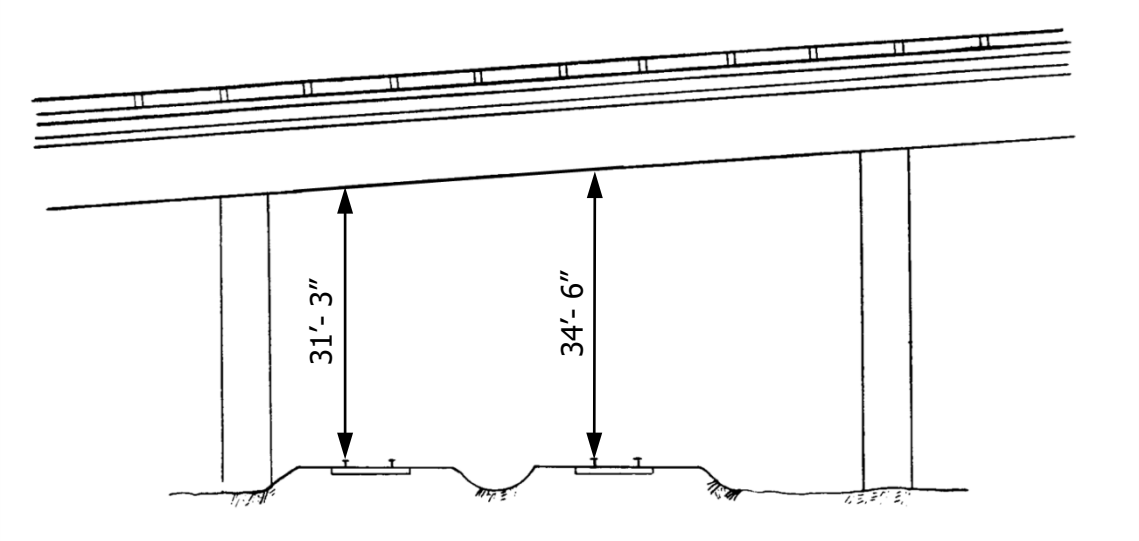

Figure 109. Bridge elevation view with two freight/passenger rail tracks below the bridge.

Examples Continued – Railroad Minimum Vertical Clearance

Two railroad tracks below the bridge. One carries passenger rail service, and one carries freight (i.e. two railroad features).

- Report 20.2 for the passenger rail feature.
- Report 21.2 for the freight rail feature.

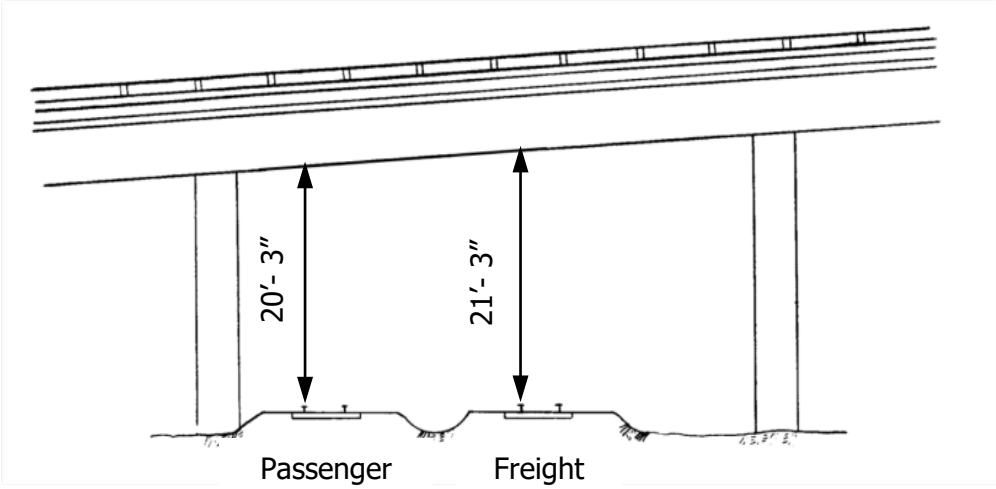

Figure 110. Bridge elevation view with one passenger rail and one freight rail track below the bridge.

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Railroad Minimum Horizontal Offset

Format	Frequency	Item ID
N (3,1)	I	B.RR.03

Specification	Commentary
Report the minimum horizontal offset for the railroad feature reported in Item B.F.01 *(Feature Type)*, rounded down to the nearest tenth of a foot. Measure perpendicular from the centerline of the tracks to the nearest substructure unit or toe of slope that is steeper than 1 to 3 (vertical to horizontal). For multiple tracks with the same railroad service type, report the minimum distance after measuring the offsets in both directions from all tracks. Report 99.9 when the minimum horizontal offset is 100 feet or greater. Report this item only when Item B.F.02 *(Feature Location)* is B.	The intent of this item is to collect the minimum distance from the centerline of the railroad track to a bridge related obstruction. Offsets greater than 30 feet may be estimated.

Examples

One railroad track below the bridge. Report 20.3.

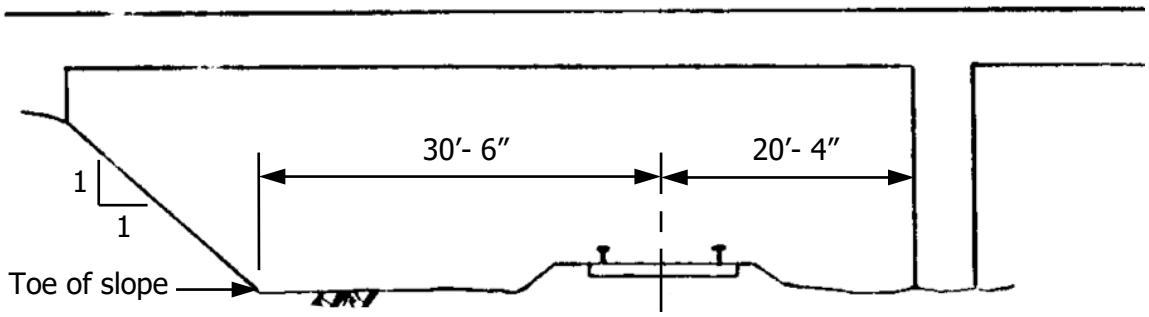

Figure 111. Bridge elevation view indicating horizontal offset for one railroad track below the bridge.

Examples Continued – Railroad Minimum Horizontal Offset

Two railroad tracks that both carry freight (i.e. one railroad feature). Report 18.5.

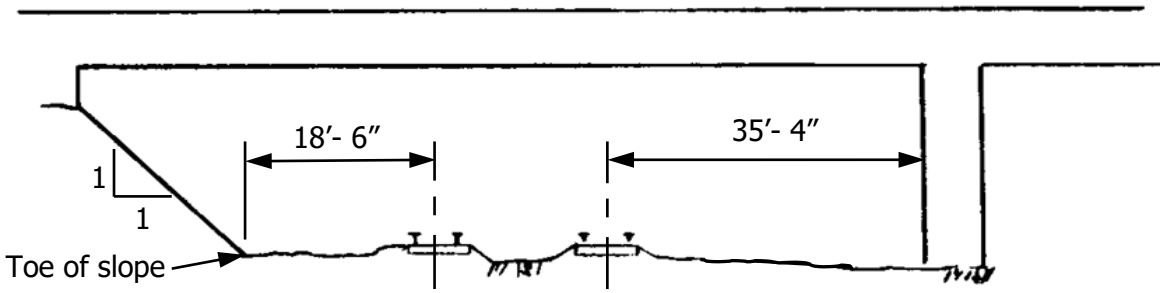

Figure 112. Bridge elevation view indicating horizontal offset for two railroad tracks below the bridge.

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Example Railroad Data for Bridge Number 15558X

The bridge carries North Hanley Road over Wabash Avenue, BNSF Railroad (two tracks, both carrying freight rail service), and the Berkeley Branch of Coldwater Creek. The minimum vertical underclearance to the railroad tracks is 23'-0" and the minimum horizontal offset is 14'-0".

Figure 113. Bridge elevation view of two railroad tracks below Bridge Number 15558X.

Figure 114. Freight train passing below Bridge Number 15558X

Table 12. Railroad data items in the Features Data Set for Bridge Number 15558X.

Item ID	Data Item	Value
B.RR.01	*Railroad Service Type*	F
B.RR.02	*Railroad Minimum Vertical Clearance*	23.0
B.RR.03	*Railroad Minimum Horizontal Offset*	14.0

Span Protective System

Format	Frequency	Item ID
AN (3)	I	B.SP.07

Specification

Report the span protective system using one of the following codes.

Code	Description
0	None
A01	Admixture – internally sealed
A02	Admixture – low permeability
A03	Admixture – polymer impregnated
A04	Admixture – corrosion inhibitor
A05	Admixture – ASR inhibitor
AX	Admixture – other
C01	Coating – paint
C02	Coating – sealer
C03	Coating – hot dip galvanizing
C04	Coating – metalizing/thermal spray
CX	Coating – other
E01	Encasement – concrete
EX	Encasement – other
M01	Membrane – built-up
M02	Membrane – sheet
M03	Membrane – liquid applied
MU	Membrane – unknown
MX	Membrane – other
P01	Patina – uncoated weathering steel

Codes continued next page.

Commentary

Code this item consistent with the material reported for Item B.SP.04 *(Span Material)*.

In cases where the span configuration may have a combination of protective systems, use the code for the predominant protective system based on protected area. In cases where multiple systems protect the same area, use the code for the outermost protective layer.

Use code 0 when the span is unprotected.

Use code 0 when unprotected steels either never were coated or currently have no signs of coating systems, and have no protective systems such as cathodic protection or weathering chemistry.

Non-protective anti-graffiti and aesthetic coatings are not considered when coding this item.

Use code C01 for weathering steel that has been painted.

Use code C02 for sealers such as silanes, siloxanes, linseed oils, etc.

Use code P01 only for weathering grades of steel.

For timber, use code T01 for oil-based or water-borne timber preservatives. Use code C01 for paints and stains.

Use the appropriate code for span members under fill that have a protective system.

2.1 – SPAN MATERIAL AND TYPE

Specification Continued – Span Protective System	
Code	Description
S01	Sacrificial – cathodic, passive
S02	Sacrificial – cathodic, active
SX	Sacrificial – other
T01	Treated – timber preservative
U	Unknown
X	Other

Examples – Span Protective System

Low permeability concrete slab bridge with waterproofing sheet membrane. Report M02.

Weathering steel multi-beam bridge that has the beam ends painted to protect from leakage through the joints. Report P01.

Wearing Surface

Format	Frequency	Item ID
AN (3)	I	B.SP.10

Specification

Report the predominant wearing surface material type protecting the deck or slab for the span configuration using one of the following codes.

Code	Description
0	None
B01	Bituminous (asphalt)
C01	Concrete – monolithic
C02	Concrete – unmodified
C03	Concrete – latex modified
C04	Concrete – low slump
C05	Concrete – fiber reinforced
C06	Concrete – microsilica
C07	Concrete – polyester
CX	Concrete – other
CU	Concrete – unknown
E01	Earth – gravel or soil
P01	Polymer – epoxy
P02	Polymer – polyester
PX	Polymer – other
S01	Steel
T01	Timber – running planks
X	Other

Do not report this item when Item B.SP.09 *(Deck Material and Type)* is 0.

Commentary

When a span configuration has a combination of wearing surface types, code the predominant wearing surface type based on the deck or slab area.

Do not consider patching materials when coding this item.

Use code 0 when no additional sacrificial concrete thickness or wearing surface is included on the deck or slab.

Use codes C01 through CU for overlays that contain portland cement.

Use code C01 when there is an additional sacrificial thickness cast concurrently with the structural deck or slab.

Use code C02 when an additional placement of concrete of the same concrete material as the deck or slab is placed after the deck or slab has cured.

Use code CU when a concrete wearing surface exists, but the specific material composition is unknown.

Use code S01 when a steel grid deck is fabricated with an additional sacrificial thickness. Code S01 is not intended for temporary steel plates.

Use code T01 where running planks are added on timber decks or slabs.

Examples

Bridge with 2” asphalt wearing surface over a sheet waterproofing membrane. Report B01.

Bridge with latex modified concrete overlay topped with an epoxy polymer overlay. Report P01.

Deck Protective System

Format	Frequency	Item ID
AN (3)	I	B.SP.11

Specification

Report the deck protective system for the span configuration using one of the following codes.

Code	Description
0	None
A01	Admixture – internally sealed
A02	Admixture – low permeability
A03	Admixture – polymer impregnated
A04	Admixture – corrosion inhibitor
A05	Admixture – ASR inhibitor
AX	Admixture – other
C01	Coating – paint
C02	Coating – silane/siloxane
C03	Coating – methacrylate
CX	Coating – other
M01	Membrane – built up
M02	Membrane – sheet
M03	Membrane – liquid applied
MU	Membrane – unknown
MX	Membrane – other
P01	Patina – weathering steel
X	Other

Do not report this item when Item B.SP.09 *(Deck Material and Type)* is 0.

Commentary

Code this item consistent with the predominant material reported in Item B.SP.09 *(Deck Material and Type)*.

In cases where the deck may have a combination of protective systems, use the code for the predominant protective system based on protected area. In cases where multiple systems protect the same area, use the code for the outermost protective layer.

Use code 0 when there is no known internal or external protective system in place.

Use code A01 for internally sealed concrete systems that use wax beads in the concrete. After the concrete cures, it is heated to melt the wax and seal the concrete.

Use code A02 when low permeability concrete is used with admixtures such as flyash, microsilica, or slag.

Use code A05 when admixtures are used to inhibit alkali-silica reactivity (ASR).

Do not use codes C02 and C03 when the material is applied for localized crack repair.

Use code M01 when the membrane is built up using combined layers of liquid and preformed/sheet membranes.

Use code MU when a membrane exists, but the type is unknown.

Use code MX when a membrane type is known, but does not match the types specified for codes M01, M02, or M03.

Examples – Deck Protective System

Bridge with 2” asphalt wearing surface over a sheet waterproofing membrane. Report M02.

Bridge deck constructed with polymer impregnated concrete and sealed with a flood coat of methacrylate. Report C03.

Substructure Protective System

Format	Frequency	Item ID
AN (3)	I	B.SB.05

Specification

Report the substructure protective system using one of the following codes.

Code	Description
0	None
A01	Admixture – internally sealed
A02	Admixture – low permeability
A03	Admixture – polymer impregnated
A04	Admixture – corrosion inhibitor
A05	Admixture – ASR inhibitor
AX	Admixture – other
C01	Coating – paint
C02	Coating – sealer
C03	Coating – galvanizing/metalizing
CX	Coating – other
E01	Encasement – concrete
EX	Encasement – other
P01	Patina – weathering steel
S01	Sacrificial – cathodic, passive
S02	Sacrificial – cathodic, active
SX	Sacrificial – other
T01	Treated – timber preservative
X	Other

Do not report this item when Item B.SB.04 *(Substructure Type)* is 0.

Commentary

Code this item consistent with the predominant material reported in Item B.SB.03 *(Substructure Material)*.

In cases where the substructure may have a combination of protective systems, use the code for the predominant protective system based on protected area. In cases where multiple systems protect the same area, use the code for the outermost protective layer.

Use code 0 when the substructure is unprotected.

Use code 0 when unprotected steels either never were coated or currently have no signs of coating systems and have no protective systems, such as, cathodic protection or weathering chemistry.

Anti-graffiti coatings are not considered when coding this item.

Use code C01 for weathering steel that has been painted.

Use code C02 for sealers such as silanes, siloxanes, linseed oils, etc.

Use code E01 for steel piles of pile bents that are encased in concrete.

Use code P01 only for weathering grades of steel.

For timber, use code T01 for oil-based or water-borne timber preservatives. Use code C01 for paints and stains.

Back to Form

2.2 – SUBSTRUCTURE MATERIAL AND TYPE

Examples – Substructure Protective System
Painted weathering steel pier cap. Report C01. Pile bent with preservative treated timber piles and concrete cap sealed with siloxane. Report C02. Pile bent type abutment with painted steel H-pile foundation, timber lagging, and reinforced concrete cap with active cathodic protection. Report S02.