

**2016 ROUTINE  
BRIDGE INSPECTION REPORT**



**BRIDGE # 656  
CP RAIL over CSAH 76(SNELLING AV)**

**DISTRICT:** Metro

**COUNTY:** Ramsey

**CITY/TOWNSHIP:** Arden Hills

**STATE:** Minnesota

**Date of Inspection:** 09/13/2016

**Equipment Used:**

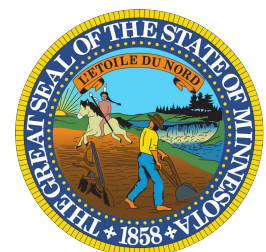
**Owner:** Railroad

**Inspected By:** Bodelson, Dan

**Report Written By:** Dan Bodelson

**Report Reviewed By:** Nicklaus Fischer

**Final Report Date:** 10/31/2016



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# Minnesota Structure Inventory Report

Bridge ID: 656

CP RAIL

over CSAH 76(SNELLING AV)

Date: 10/31/2016

| GENERAL                            |       |                 |   |
|------------------------------------|-------|-----------------|---|
| <b>Agency Br. No.</b>              |       |                 |   |
| District Metro                     |       |                 |   |
| <b>Maint. Area</b>                 |       | <b>Crew</b>     |   |
| County 062 - Ramsey                |       |                 |   |
| City Arden Hills                   |       |                 |   |
| Township                           |       |                 |   |
| Desc. Loc. 0.2 MI N OF JCT CSAH 15 |       |                 |   |
| <b>Sect., Twp., Range</b>          |       | 27 - 030N - 23W |   |
| <b>Latitude Deg</b>                | 45    | <b>Min</b>      | 3 |
| <b>Sec</b>                         | 11.29 |                 |   |
| <b>Longitude Deg</b>               | 93    | <b>Min</b>      | 9 |
| <b>Sec</b>                         | 53.12 |                 |   |
| Custodian 27 - Railroad            |       |                 |   |
| Owner 27 - Railroad                |       |                 |   |
| <b>BMU Agreement</b>               |       |                 |   |
| <b>Year Built</b>                  |       | 1927            |   |
| <b>MN Year Reconstructed</b>       |       |                 |   |
| <b>FHWA Year Reconstructed</b>     |       |                 |   |
| <b>MN Temporary Status</b>         |       |                 |   |
| Bridge Plan Location 0 - NO PLAN   |       |                 |   |
| <b>Date Opened to Traffic</b>      |       |                 |   |
| On-Off System 0 - OFF              |       |                 |   |
| Legislative District 50B           |       |                 |   |
| <b>ABC Suitable</b>                |       |                 |   |

| ROADWAY                            |               |                 |
|------------------------------------|---------------|-----------------|
| <b>Bridge Match ID (TIS)</b>       |               |                 |
| Roadway O/U Key none               |               |                 |
| <b>Route Sys</b>                   | <b>Number</b> |                 |
| <b>Roadway Name or Description</b> |               |                 |
| <b>Level of Service</b>            |               |                 |
| <b>Roadway Type</b>                |               |                 |
| <b>Control Section (TH Only)</b>   |               |                 |
| <b>Reference Point</b>             |               |                 |
| <b>Detour Length</b> mi            |               |                 |
| <b>Lanes</b>                       | <b>On</b>     | <b>Under</b>    |
|                                    | ADT           | Year            |
| <b>HCACT</b>                       | 0             | <b>ADTT</b> 0 % |
| <b>Functional Class</b>            |               |                 |

| INSPECTION                               |            |
|--|------------|
| <b>Userkey</b>                           | 102        |
| <b>Unofficial Structurally Deficient</b> | N          |
| <b>Unofficial Functionally Obsolete</b>  | N          |
| <b>Unofficial Sufficiency Rating</b>     | -2         |
| <b>Routine Inspection Date</b>           | 09/13/2016 |
| <b>Routine Inspection Frequency</b>      | 12         |
| <b>Inspector Name</b>                    | CO Bridge  |
| <b>Status</b>                            | A - Open   |

| STRUCTURE                |                               |
|--------------------------|-------------------------------|
| <b>Service On</b>        | 2 - Railroad                  |
| <b>Service Under</b>     | 1 - Highway, w/ or w/out ped. |
| <b>Main Span Type</b>    |                               |
| 4 - Steel Continuous     | 01 - Beam Span                |
| <b>Main Span Detail</b>  |                               |
| <b>Appr. Span Type</b>   |                               |
| <b>Appr. Span Detail</b> |                               |
| <b>Skew</b>              | 0                             |
| <b>Culvert Type</b>      |                               |
| <b>Barrel Length</b>     | ft.                           |
| <b>Cantilever ID</b>     |                               |

| RDWY DIMENSIONS               |              |              |
|-------------------------------|--------------|--------------|
| <b>If Divided</b>             | <b>NB-EB</b> | <b>SB-WB</b> |
| <b>Roadway Width</b>          | ft.          | ft.          |
| <b>Vertical Clearance</b>     | ft.          | ft.          |
| <b>Max. Vert. Clear.</b>      | ft.          | ft.          |
| <b>Horizontal Clear.</b>      | ft.          | ft.          |
| <b>Lateral Clearance</b>      | ft.          | ft.          |
| <b>Appr. Surface Width</b>    | ft.          |              |
| <b>Bridge Roadway Width</b>   | ft.          |              |
| <b>Median Width On Bridge</b> | ft.          |              |

| NBI CONDITION RATINGS |                    |
|-----------------------|--------------------|
| <b>Deck</b>           | N - Not Applicable |
| <b>Unsound Deck %</b> |                    |
| <b>Superstructure</b> | 5 - Fair Condition |
| <b>Substructure</b>   | 4 - Poor Condition |
| <b>Channel</b>        | N - Not Applicable |
| <b>Culvert</b>        | N - Not Applicable |

| NUMBER OF SPANS                    |                                 |              |         |
|------------------------------------|---------------------------------|--------------|---------|
| <b>MAIN:</b>                       | 3                               | <b>APPR:</b> | 0       |
| <b>TOTAL:</b>                      | 3                               |              |         |
| <b>Main Span Length</b>            | 33.9                            | ft.          |         |
| <b>Structure Length</b>            | 61.7                            | ft.          |         |
| <b>Deck Width (Out-to-Out)</b>     | 25.5                            | ft.          |         |
| <b>Deck Material</b>               | N - Not Applicable              |              |         |
| <b>Wear Surf Type</b>              | N - Not Applicable (applies onl |              |         |
| <b>Wear Surf Install Year</b>      |                                 |              |         |
| <b>Wear Course/Fill Depth</b>      | 0.00                            | ft.          |         |
| <b>Deck Membrane</b>               | 0 - None                        |              |         |
| <b>Deck Rebars</b>                 | N - Not Applicable (no deck)    |              |         |
| <b>Deck Rebars Install Year</b>    |                                 |              |         |
| <b>Structure Area (Out-to-Out)</b> | 1573                            | sq. ft.      |         |
| <b>Roadway Area (Curb-to-Curb)</b> | sq. ft.                         |              |         |
| <b>Sidewalk Width</b>              | Lt 0.00                         | ft.          | Rt 0.00 |
|                                    | ft.                             |              | ft.     |
| <b>Curb Height</b>                 | Lt 0.00                         | ft.          | Rt 0.00 |
|                                    | ft.                             |              | ft.     |
| <b>Rail Type</b>                   | Lt NN                           |              | Rt NN   |

| MISC. BRIDGE DATA          |                           |
|----------------------------|---------------------------|
| <b>Structure Flared</b>    | 0 - No flare              |
| <b>Parallel Structure</b>  | N - No parallel structure |
| <b>Field Conn. ID</b>      | 2 - Riveted               |
| <b>Abutment Foundation</b> | 1 - CONC                  |
| <b>(Material/Type)</b>     | 0 - UNKNOWN               |
| <b>Pier Foundation</b>     | 1 - CONC                  |
| <b>(Material/Type)</b>     | 0 - UNKNOWN               |
| <b>Historic Status</b>     | 5 - Not eligible          |

| NBI APPRAISAL RATINGS         |                    |
|-------------------------------|--------------------|
| <b>Structure Evaluation</b> N |                    |
| <b>Deck Geometry</b>          | N                  |
| <b>Underclearances</b>        | 2                  |
| <b>Water Adequacy</b>         | N - Not Applicable |
| <b>Approach Alignment</b>     | N - Not Applicable |

| PAINT                  |                     |
|------------------------|---------------------|
| <b>Year Painted</b>    | 1961                |
| <b>Unsound Paint %</b> |                     |
| <b>Painted Area</b>    | sq. ft.             |
| <b>Primer Type</b>     | 1 - Lead - non 3309 |
| <b>Finish Type</b>     |                     |

| SAFETY FEATURES        |                  |
|------------------------|------------------|
| <b>Bridge Railing</b>  | N - NOT REQUIRED |
| <b>GR Transition</b>   | N - NOT REQUIRED |
| <b>Appr. Guardrail</b> | N - NOT REQUIRED |
| <b>GR Termini</b>      | N - NOT REQUIRED |

| BRIDGE SIGNS       |                    |
|--------------------|--------------------|
| <b>Posted Load</b> | 0 - Not Required   |
| <b>Traffic</b>     | 0 - Not Required   |
| <b>Horizontal</b>  | 1 - Object Markers |
| <b>Vertical</b>    | 0 - Not Required   |

| IN DEPTH INSP.        |     |      |      |
|-----------------------|-----|------|------|
|                       | Y/N | Freq | Date |
| <b>Frac. Critical</b> | N   |      |      |
| <b>Underwater</b>     | N   |      |      |
| <b>Pinned Asbly.</b>  | N   |      |      |
| <b>Spec. Feat.</b>    |     |      |      |

| WATERWAY                                   |                               |             |                   |
|--|-------------------------------|-------------|-------------------|
| <b>Drainage Area (sq. mi.)</b>             |                               |             |                   |
| <b>Waterway Opening</b>                    | sq. ft.                       |             |                   |
| <b>Navigation Control</b>                  | N - Not applicable, no waterw |             |                   |
| <b>Pier Protection</b>                     |                               |             |                   |
| <b>Nav. Clr. (ft.)</b>                     | <b>Vert.</b>                  | ft.         | <b>Horiz.</b> ft. |
| <b>Nav. Vert. Lift Bridge Clear. (ft.)</b> |                               |             |                   |
| <b>MN Scour Code</b>                       | A - NON WATER'                | <b>Year</b> |                   |

| CAPACITY RATINGS              |              |             |
|-------------------------------|--------------|-------------|
| <b>Design Load</b>            | 8 - RAILROAD |             |
| <b>Operating Rating</b>       | 2 - AS       | HS 65.0     |
| <b>Inventory Rating</b>       | 2 - AS       | HS 65.0     |
| <b>Posting VEH:</b>           | <b>SEMI:</b> | <b>DBL:</b> |
| <b>Rating Date</b>            |              |             |
| <b>Minnesota Permit Codes</b> |              |             |
| A: N - N/A                    |              |             |
| B: N - N/A                    |              |             |
| C: N - N/A                    |              |             |

# Minnesota Structure Inventory Report

Bridge ID: 656

CP RAIL over CSAH 76(SNELLING AV)

Date: 09/14/2016

| + GENERAL +  | + ROADWAY +  | + INSPECTION +  |                        |                       |            |  |
|--|--|---|------------------------|-----------------------|------------|--|
| <b>Agency Br. No.</b> Crew<br><b>District</b> 05 <b>Maint. Area</b><br><b>County</b> 062 - Ramsey<br><b>City</b> Arden Hills<br><b>Township</b><br><b>Desc. Loc.</b> 0.2 MI N OF JCT CSAH 15<br><b>Sect., Twp., Range</b> 27 - 030N - 23W<br><b>Latitude</b> 45 ° 3' 11.29 "<br><b>Longitude</b> 93 ° 9' 53.12 "<br><b>Custodian</b> 27 - Railroad<br><b>Owner</b> 27 - Railroad<br><b>BMU Agreement</b><br><b>Year Built</b> 1927<br><b>MN Year Reconstructed</b><br><b>FHWA Year Reconstructed</b><br><b>MN Temporary Status</b><br><b>Bridge Plan Location</b> 0 - NO PLAN<br><b>Date Opened to Traffic</b><br><b>On - Off System</b> 0 - OFF<br><b>Legislative District</b> 50B<br><b>Potential ABC</b> 2 - N/A  | <b>Bridge Match ID (TIS)</b><br><b>Roadway O/U Key</b><br><b>Route Sys</b> <b>Number</b><br><b>Roadway Name or Description</b><br><b>Level of Service</b><br><b>Roadway Type</b><br><b>Control Section (TH Only)</b><br><b>Reference Point</b><br><b>Detour Length</b> mi.<br><b>Lanes</b> ON UNDER 2<br>ADT YEAR<br><b>HCA DT</b> ADTT %<br><b>Functional Class</b> | <b>Userkey</b> 102<br><b>Structurally Deficient</b> N<br><b>Functionally Obsolete</b> N<br><b>Sufficiency Rating</b> -2<br><b>Routine Inspection Date</b> 09/13/2016<br><b>Routine Inspection Frequency</b> 12<br><b>Inspector Name</b> Bodelson, Dan<br><b>Status</b> A - Open                                     |                        |                       |            |  |
|  |  | + NBI CONDITION RATINGS +   |                        |                       |            |  |
|  |  | <b>Deck</b>   | N                      | <b>Unsound Deck %</b> |            |  |
|  |  | <b>Superstructure</b>   | 5                      |                       |            |  |
|  |  | <b>Substructure</b>   | 4                      |                       |            |  |
|  |  | <b>Channel</b>  | N                      |                       |            |  |
|  |  | <b>Culvert</b>  | N                      |                       |            |  |
|  |  | + NBI APPRAISAL RATINGS +   |                        |                       |            |  |
|  |  | <b>Structure Evaluation</b>   | N                      |                       |            |  |
|  |  | <b>Deck Geometry</b>  | N                      |                       |            |  |
|  |  | <b>Underclearances</b>  | 2                      |                       |            |  |
|  |  | <b>Waterway Adequacy</b>  | N                      |                       |            |  |
|  |  | <b>Approach Alignment</b>   | N                      |                       |            |  |
|  |  | + SAFETY FEATURES +   |                        |                       |            |  |
|  |  | <b>Bridge Railing</b>   | N - NOT REQUIRED       |                       |            |  |
|  |  | <b>GR Transition</b>  | N - NOT REQUIRED       |                       |            |  |
|  |  | <b>Appr. Guardrail</b>  | N - NOT REQUIRED       |                       |            |  |
|  |  | <b>GR Termini</b>   | N - NOT REQUIRED       |                       |            |  |
|  |  | + IN DEPTH INSP. +  |                        |                       |            |  |
|  |  |   | Y/N                    | Freq                  | Date       |  |
|  |  | <b>Frac. Critical</b>   | N                      |                       |            |  |
|  |  | <b>Underwater</b>   | N                      |                       |            |  |
|  |  | <b>Pinned Asbly.</b>  | N                      |                       |            |  |
|  |  | <b>Spec. Feat.</b>  |                        |                       |            |  |
|  |  | + WATERWAY +  |                        |                       |            |  |
|  |  | <b>Drainage Area (sq. mi.)</b>  |                        |                       |            |  |
|  |  | <b>Waterway Opening (sf.)</b>   |                        |                       |            |  |
|  |  | <b>Navigation Control</b>   | N - Not applicable, no |                       |            |  |
|  |  | <b>Pier Protection</b>  | -                      |                       |            |  |
|  |  | <b>Nav. Clr. (ft.)</b>  | Vert.                  | 0.0                   | Horiz. 0.0 |  |
|  |  | <b>Nav. Vert. Lift Bridge Clear. (ft.)</b>  |                        |                       |            |  |
|  |  | <b>MN Scour Code</b>  | A - NON                | Year                  |            |  |
|  |  | + CAPACITY RATINGS +  |                        |                       |            |  |
|  |  | <b>Design Load</b>  | 8 - RAILROAD           |                       |            |  |
|  |  | <b>Operating Rating</b>   | 7 - RAILROAD           | 65.0                  |            |  |
|  |  | <b>Inventory Rating</b>   | 7 - RAILROAD           | 65.0                  |            |  |
|  |  | <b>Posting VEH:</b>   | SEMI:                  | DBL:                  |            |  |
|  |  | <b>Rating Date</b>  |                        |                       |            |  |
|  |  | <b>Overweight Permit Codes</b>  |                        |                       |            |  |
|  |  | A   | N - N/A                | B                     | N - N/A    |  |
|  |  |   |                        | C                     | N - N/A    |  |
| + STRUCTURE +  | + RDWY DIMENSIONS +  | + MIS C. BRIDGE DATA +  |                        |                       |            |  |
| <b>Service On</b> 2 - Railroad<br><b>Service Under</b> 1 - Highway, w/ or w/out ped.<br><b>Main Span Type</b> 4 - Steel Continuous<br><b>Main Span Design</b> 01 - Beam Span<br><b>Main Span Detail</b><br><b>Appr. Span Type</b><br><b>Appr. Span Design</b><br><b>Appr. Span Detail</b><br><b>Skew</b> 0<br><b>Culvert Type</b><br><b>Barrel Length</b><br><b>Cantilever ID</b><br><br><b>Number of Spans</b><br><b>MAIN:</b> 3 <b>APPR:</b> 0 <b>TOTAL:</b><br><b>Main Span Length</b> 33.9 ft.<br><b>Structure Length</b> 61.7 ft.<br><b>Deck Width (Out-to-Out)</b> 25.5 ft.<br><b>Deck Material</b> N - Not Applicable<br><b>Wear Surf Type</b> N - Not Applicable (applies)<br><b>Wear Surf Install Year</b><br><b>Wear Course/Fill Depth</b> 0.00 ft.<br><b>Deck Membrane</b> 0 - None<br><b>Deck Rebars</b> N - Not Applicable (no deck)<br><b>Deck Rebars Install Year</b><br><b>Structure Area (Out-to-Out)</b> 1573 sq. ft.<br><b>Roadway Area (Curb-to-Curb)</b> sq. ft.<br><b>Sidewalk Width</b> 50A. Lt 0.00 ft. 50B. Rt 0.00 ft.<br><b>Curb Height</b> Lt 0.00 ft. Rt 0.00 ft.<br><b>Rail Type</b> Lt NN Rt NN | <b>If Divided</b> <b>NB-EB</b> <b>SB-WB</b><br><b>Roadway Width</b> ft. ft.<br><b>Vertical Clearance</b> ft. ft.<br><b>Max. Vert. Clear.</b> ft. ft.<br><b>Horizontal Clear.</b> ft. ft.<br><b>Lateral Clearance</b> ft. ft.<br><b>Appr. Surface Width</b> ft.<br><b>Bridge Roadway Width</b> ft.<br><b>Median Width On Bridge</b> ft.                               | <b>Structure Flared</b> 0 - No flare<br><b>Parallel Structure</b> N - No parallel structure<br><b>Field Conn. ID</b> 2 - Riveted<br><b>Abutment Foundation (Material/Type)</b> 1 - CONC<br>0 - UNKNOWN<br><b>Pier Foundation (Material/Type)</b> 1 - CONC<br>0 - UNKNOWN<br><b>Historic Status</b> 5 - Not eligible |                        |                       |            |  |
|  | + PAINT +  | + BRIDGE SIGNS +  |                        |                       |            |  |
|  | <b>Year Painted</b> 1961<br><b>Unsound Paint %</b><br><b>Painted Area</b> sq. ft.<br><b>Primer Type</b> 1 - Lead - non 3309<br><b>Finish Type</b>  | <b>Posted Load</b> 0 - Not Required<br><b>Traffic</b> 0 - Not Required<br><b>Horizontal</b> 1 - Object Markers<br><b>Vertical</b> 0 - Not Required  |                        |                       |            |  |

**MINNESOTA BRIDGE INSPECTION REPORT**

10/31/2016

**BRIDGE 656 CP RAIL OVER CSAH 76(SNELLING AV)**

**ROUTINE INSP. DATE: 09/13/2016**

|  |                                   |                                     |
|--|-----------------------------------|-------------------------------------|
| County: Ramsey   | Location: 0.2 MI N OF JCT CSAH 15 | Length: 61.7 ft.                    |
| City: Arden Hills                                      | Route: Ref. Pt.:                  | Deck Width: 25.5 ft.                |
| Township:  | Control Section:                  | Rdwy. Area/ Pct. Unsnd: sq. ft. / % |
| Section: 27 Township: 030N Range: 23W Maint. Area:     |                                   | Paint Area/ Pct. Unsnd: sq. ft. / % |
| Span Type: 4 - Steel Continuous 2 -                    | Local Agency Bridge Nbr.:         | Culvert: N/A                        |
| List: Stringer/Multi-beam or Girder                    |                                   | Postings:                           |
| NBI Deck: N Super: 5 Sub: 4 Chan: N Culv: N            |                                   |                                     |
|  | Open, Posted, Closed: A - Open    |                                     |
|  | MN Scour Code: A - NON WATERWAY   |                                     |
| Appraisal Ratings - Approach: N Waterway: N            |                                   | Unofficial Structurally Deficient N |
| Required Bridge Signs - Load Posting: 0 - Not Required | Traffic: 0 - Not Required         | Unofficial Functionally Obsolete N  |
| Horizontal: 1 - Object Markers                         | Vertical: 0 - Not Required        | Unofficial Sufficiency Rating N     |

| ELEM NBR | ELEMENT NAME                 | ENV | REPORT TYPE | INSP. DATE | QUANTITY | QTY CS 1 | QTY CS 2 | QTY CS 3 | QTY CS 4 | QTY CS 5 |
|----------|------------------------------|-----|-------------|------------|----------|----------|----------|----------|----------|----------|
| 107      | Painted Steel Girder or Beam | 2   | Routine     | 09/13/2016 | 489 LF   | 0        | 0        | 489      | 0        | 0        |
|          |                              |     | Routine     | 09/25/2015 | 489 LF   | 0        | 0        | 489      | 0        | 0        |

Notes: [2007-2015] Paint system has failed. Diaphragms are in place and girders are still in good alignment, but freckled rust is prevalent.  
 [2005-2015] Steel girders contain some minor section loss. Steel girders need paint. Steel girders contain some lead paint.  
 [2005-2015] No collision damage to steel girders. Rail is active on the north side of the bridge.

|     |                            |   |         |            |       |   |    |   |   |     |
|-----|----------------------------|---|---------|------------|-------|---|----|---|---|-----|
| 205 | Reinforced Concrete Column | 2 | Routine | 09/13/2016 | 10 EA | 0 | 10 | 0 | 0 | N/A |
|     |                            |   | Routine | 09/25/2015 | 10 EA | 0 | 10 | 0 | 0 | N/A |

Notes: [2014] Repaired concrete columns, poured as two reinforced concrete pier walls (27' each).  
 [2013] Reinforced concrete columns contain major delamination with section loss. Could use shot-crete rehabilitation.  
 [2009-2013] There is major spalling & delamination with exposed rebar to the west side of the east pier web.  
 [2010-2013] Column #1 has major delamination 3'X2' area with section loss.  
 [2003-2013] Concrete columns #1, #6, #8, #9 & #10 have delamination and exposed rebar w/loss of section.  
 [2010-2013] Column #7 has major delamination near the top with section loss.  
 [2008-2013] Columns #3 & #5 contain major delamination.  
 East and west piers are severely spalled, reinforcing steel exposed w/corrosion. 1983-1984. Patched 1986.  
 NE pier has hairline crack at fillet. 1983.  
 Some epoxy work on lower pier at retaining wall level 1984. Cosmetic work done is holding on west pier 1987-1988.

|     |                               |   |         |            |       |   |    |   |   |     |
|-----|-------------------------------|---|---------|------------|-------|---|----|---|---|-----|
| 210 | Reinforced Concrete Pier Wall | 2 | Routine | 09/13/2016 | 54 LF | 0 | 54 | 0 | 0 | N/A |
|     |                               |   | Routine | 09/25/2015 | 54 LF | 0 | 54 | 0 | 0 | N/A |

Notes: [2015] Numerous minor horizontal & vertical cracks w/ effluence & rust on both pier walls.  
 [2014] Repaired concrete columns with reinforced concrete pier walls over the summer  
 [2014] added this element in 2014 Bridge Inspection Report

|     |                              |   |         |            |       |   |    |    |   |     |
|-----|------------------------------|---|---------|------------|-------|---|----|----|---|-----|
| 215 | Reinforced Concrete Abutment | 2 | Routine | 09/13/2016 | 52 LF | 0 | 40 | 12 | 0 | N/A |
|     |                              |   | Routine | 09/25/2015 | 52 LF | 0 | 40 | 12 | 0 | N/A |

Notes: [2014-2015] Major spalling of parapet of both abutments.  
 [2004-2015] Delamination w/spalling is present at backwall of both abutments. Also minor vertical cracking on west abutment. Major spalling and delamination is present at SW & NE corners.  
 [2007-2015] There is 2.5' area of delamination @ NE corner of east abutment.  
 [2003-2015] There is 2.5' area of delamination & spalling on the east abutment at center.  
 [2003-2015] 75% in condition state #2 & 25% in condition state #3. Abutment backwalls were modified to install steel girders.  
 [1983-2015] Some erosion back side of abutments at all 4 corners.

| ELEM NBR  | ELEMENT NAME                 | ENV | REPORT TYPE | INSP. DATE | QUANTITY | QTY CS 1 | QTY CS 2 | QTY CS 3 | QTY CS 4 | QTY CS 5 |
|---|------------------------------|-----|-------------|------------|----------|----------|----------|----------|----------|----------|
| 234   | Reinforced Concrete Pier Cap | 2   | Routine     | 09/13/2016 | 72 LF    | 0        | 72       | 0        | 0        | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 72 LF    | 0        | 72       | 0        | 0        | N/A      |
| <p>Notes: [2014] Repaired pier caps with pier walls, 100% in condition state #2<br/> [2013] The reinforced concrete cap has 75% in condition state #2 and 25% in condition state #3.<br/> WEST PIER CAP<br/> {2014} Repaired<br/> [2013] Major spalling and delamination located at the south end of the west cap. [2006-2013] There is 2 LF of delamination present between columns #1 &amp; #3.<br/> EAST PIER CAP<br/> [2014] Repaired<br/> [2007-2013] There is a 6' crack at the east side of east cap with delamination beginning. Also some moderate horizontal cracking.<br/> [2002-2013] There is 3' of spalling located on top at the center with delamination &amp; rebar corrosion.</p> |                              |     |             |            |          |          |          |          |          |          |
| 311   | Expansion Bearing            | 2   | Routine     | 09/13/2016 | 32 EA    | 0        | 16       | 16       | N/A      | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 32 EA    | 0        | 16       | 16       | N/A      | N/A      |
| <p>Notes: [2015] New bearings installed in 2014 with new pier walls<br/> [2010-2014] The north side bearings require cleaning &amp; lubrication. Bearings lubricated in 1982 should consider total replacement.<br/> [1983-2014] The north 16 bearings have moderate corrosion. [2001-2014] The south 16 bearings have advanced corrosion.<br/> No active rail on the south side of bridge. [2006-2013] Bolt is missing at the #19 bearing.</p>   |                              |     |             |            |          |          |          |          |          |          |
| 362   | Traffic Impact Smart Flag    | 2   | Routine     | 09/13/2016 | 1 EA     | 0        | 1        | 0        | N/A      | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 1 EA     | 0        | 1        | 0        | N/A      | N/A      |
| <p>Notes: [2014] Repaired concrete columns, poured as two reinforced concrete pier walls.<br/> [2002-2013] Traffic impact on columns have occurred &amp; patched. Patches are letting loose. Recommend shot-crete rehabilitation.</p>   |                              |     |             |            |          |          |          |          |          |          |
| 964   | Critical Finding Smart Flag  | 2   | Routine     | 09/13/2016 | 1 EA     | 1        | 0        | N/A      | N/A      | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 1 EA     | 1        | 0        | N/A      | N/A      | N/A      |
| <p>Notes: DO NOT DELETE THIS CRITICAL FINDING SMART FLAG.</p>   |                              |     |             |            |          |          |          |          |          |          |
| 981   | Signing                      | 2   | Routine     | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        | 0        |
|   |                              |     | Routine     | 09/25/2015 | 1 EA     | 1        | 0        | 0        | 0        | 0        |
| <p>Notes: [2015] Hazard marker on SE corner has been installed.<br/> [2014] Hazard marker on SE corner needs to be installed.<br/> [2002-2015] All appropriate signs are in place.</p>  |                              |     |             |            |          |          |          |          |          |          |
| 982   | Approach Guardrail           | 2   | Routine     | 09/13/2016 | 1 EA     | 0        | 0        | 1        | N/A      | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 1 EA     | 0        | 0        | 1        | N/A      | N/A      |
| <p>Notes: [2015] There are minor to moderate scrapes to guardrail on both sides.<br/> [2007-2014] There are minor scrapes to guardrail on both sides.<br/> [1983-2014] No guardrail on road departure side.<br/> [1994-2014] Guardrail system should be continuous under bridge.</p>  |                              |     |             |            |          |          |          |          |          |          |
| 985   | Slopes & Slope Protection    | 2   | Routine     | 09/13/2016 | 1 EA     | 0        | 1        | 0        | N/A      | N/A      |
|   |                              |     | Routine     | 09/25/2015 | 1 EA     | 0        | 1        | 0        | N/A      | N/A      |
| <p>Notes: [2014-2015] Ballast is over top of curb on SE &amp; NE corners &amp; should be cleaned off of roadway.<br/> [2011-2015] Minor erosion at the SW &amp; SE corners.<br/> The west slope has a new C.I.P. concrete retaining wall installed in 2010.<br/> [2009-2015] There is settlement of ballast slope protection at the east abutment.<br/> [2005-2014] Slight movement of grouted slope paving at the NW corner. Pre-cast concrete wingwall added to the NE &amp; NW corners in 2000.<br/> [2002-2013] Recommend timber boards at SW &amp; SE corners to retain ballast. Ballast is moving into the guardrail at the SE corner.</p>  |                              |     |             |            |          |          |          |          |          |          |

General Notes: [2016] Bridge safety inspection was completed by Dan Bodelson & Randy Bussiere on 9/13/2016.  
[2015] Bridge safety inspection was completed on 9/25/2015 by Dan Bodelson & Brian Essler



# MINNESOTA BRIDGE INSPECTION REPORT

10/31/2016

Inspector: CO Bridge

## BRIDGE 656 CP RAIL OVER CSAH 76(SNELLING AV)

|  |                                   |                                     |
|--|-----------------------------------|-------------------------------------|
| County: Ramsey                                     | Location: 0.2 MI N OF JCT CSAH 15 | Length: 61.7 ft.                    |
| City: Arden Hills                                  | Route: Ref. Pt.:                  | Deck Width: 25.5 ft.                |
| Township:  | Control Section:                  | Rdwy. Area/ Pct. Unsnd: sq. ft. / % |
| Section: 27 Township: 030N Range: 23W Maint. Area: |                                   | Paint Area/ Pct. Unsnd: sq. ft. / % |
| Span Type: 4 - Steel Continuous 2 -                | Local Agency Bridge Nbr.:         | Culvert: N/A                        |
| List: Stringer/Multi-beam or Girder                |                                   | Postings:                           |
| NBI Deck: N Super: 5 Sub: 4 Chan: N Culv: N        |                                   |                                     |
|  | Open, Posted, Closed: A - Open    |                                     |
|  | MN Scour Code: A - NON WATERWAY   |                                     |

|  |                                     |
|--|-------------------------------------|
| Appraisal Ratings - Approach: N Waterway: N            | Unofficial Structurally Deficient N |
| Required Bridge Signs - Load Posting: 0 - Not Required | Unofficial Functionally Obsolete N  |
| Horizontal: 1 - Object Markers                         | Unofficial Sufficiency Rating N     |
| Traffic: 0 - Not Required                              |                                     |
| Vertical: 0 - Not Required                             |                                     |

| ELEM NBR   | ELEMENT NAME                  | REPORT TYPE     | INSP. DATE | QUANTITY | QTY CS 1 | QTY CS 2 | QTY CS 3 | QTY CS 4 |
|--|-------------------------------|-----------------|------------|----------|----------|----------|----------|----------|
| 107  | Steel Open Girder/Beam        | Routine         | 09/13/2016 | 489 LF   | 0        | 489      | 0        | 0        |
|  |                               | Migrated Values |            | 489 LF   | 0        | 489      | 0        | 0        |
| Notes: [2007-2016] Paint system has failed. Diaphragms are in place and girders are still in good alignment, but freckled rust is prevalent.<br>[2005-2016] Steel girders contain some minor section loss. Steel girders need paint. Steel girders contain some lead paint.<br>[2005-2016] No collision damage to steel girders. Rail is active on the north side of the bridge.   |                               |                 |            |          |          |          |          |          |
| 515  | Steel Protective Coating      | Routine         | 09/13/2016 | 4500 SF  | 0        | 0        | 0        | 4500     |
|  |                               | Migrated Values |            | 4500 SF  | 0        | 0        | 0        | 4500     |
| Notes: [2016] Migrator assumed quantity of 999 SF and estimated the condition states.<br>[2016] Outer beams (pier walls to abutments) 1.67' web x 0.69' flange x 0.04' thick = 6.18 SF/ft. x 14' long x 16 = 1384 SF<br>[2016] Inner beams (between pier walls) 2.35' web x 1.2' flange x 0.07 thick = 9.78 SF/ft. x 33' long x 8 = 2582 SF<br>[2016] Outer diaphragms 2.6' x 1.25' = 3.25 SF x 2 sides = 6.5 SF each x (18 west + 18 east) = 234 SF<br>[2016] Inner diaphragms 2.5' x 2.0' = 5.00 SF x 2 = 10.00 SF each x 30 = 300 SF  |                               |                 |            |          |          |          |          |          |
| 205  | Reinforced Concrete Column    | Routine         | 09/13/2016 | 10 EA    | 0        | 10       | 0        | 0        |
|  |                               | Migrated Values |            | 10 EA    | 0        | 10       | 0        | 0        |
| Notes: [2016] Concrete columns have minor cracks with rust stain from beams above.<br>[2014] Repaired concrete columns, poured as two reinforced concrete pier walls (27' each).<br>[2013] Reinforced concrete columns contain major delamination with section loss. Could use shot-crete rehabilitation.<br>[2009-2013] There is major spalling & delamination with exposed rebar to the west side of the east pier web.<br>[2010-2013] Column #1 has major delamination 3'X2' area with section loss.<br>[2003-2013] Concrete columns #1, #6, #8, #9 & #10 have delamination and exposed rebar w/loss of section.<br>[2010-2013] Column #7 has major delamination near the top with section loss.<br>[2008-2013] Columns #3 & #5 contain major delamination.<br>East and west piers are severely spalled, reinforcing steel exposed w/corrosion. 1983-1984. Patched 1986.<br>NE pier has hairline crack at filet. 1983.<br>Some epoxy work on lower pier at retaining wall level 1984. Cosmetic work done is holding on west pier 1987-1988. |                               |                 |            |          |          |          |          |          |
| 210  | Reinforced Concrete Pier Wall | Routine         | 09/13/2016 | 54 LF    | 0        | 54       | 0        | 0        |
|  |                               | Migrated Values |            | 54 LF    | 0        | 54       | 0        | 0        |
| Notes: [2015-2016] Numerous minor horizontal & vertical cracks w/ effluence & rust on both pier walls.<br>[2014] Repaired concrete columns with reinforced concrete pier walls over the summer<br>[2014] added this element in 2014 Bridge Inspection Report   |                               |                 |            |          |          |          |          |          |
| 215  | Reinforced Concrete Abutment  | Routine         | 09/13/2016 | 52 LF    | 0        | 40       | 12       | 0        |
|  |                               | Migrated Values |            | 52 LF    | 0        | 40       | 12       | 0        |
| Notes: [2016] West abutment has 2' x 6' moderate spall & 1' x 4' moderate spall in top of south end.<br>[2014-2016] Major spalling of parapet of both abutments.<br>[2004-2016] Delamination w/spalling is present at backwall of both abutments. Also minor vertical cracking on west abutment. Major spalling and delamination is present at SW & NE corners.<br>[2007-2016] There is 2.5' area of delamination @ NE corner of east abutment.<br>[2003-2016] There is 2.5' area of delamination & spalling on the east abutment at center.<br>[2003-2016] 75% in condition state #2 & 25% in condition state #3. Abutment backwalls were modified to install steel girders.<br>[1983-2015] Some erosion back side of abutments at all 4 corners.   |                               |                 |            |          |          |          |          |          |



**BRIDGE 656 CP RAIL OVER CSAH 76(SNELLING AV)**

| ELEM NBR  | ELEMENT NAME                            | REPORT TYPE     | INSP. DATE | QUANTITY | QTY CS 1 | QTY CS 2 | QTY CS 3 | QTY CS 4 |
|---|---|-----------------|------------|----------|----------|----------|----------|----------|
| 234   | Reinforced Concrete Pier Cap            | Routine         | 09/13/2016 | 72 LF    | 0        | 72       | 0        | 0        |
|   |   | Migrated Values |            | 72 LF    | 0        | 72       | 0        | 0        |
| <p>Notes: [2014-2016] Repaired pier caps with pier walls, 100% in condition state #2<br/>                     [2013] The reinforced concrete cap has 75% in condition state #2 and 25% in condition state #3.<br/>                     WEST PIER CAP<br/>                     [2014] Repaired<br/>                     [2013] Major spalling and delamination located at the south end of the west cap. [2006-2013] There is 2 LF of delamination present between columns #1 3.<br/>                     EAST PIER CAP<br/>                     [2014] Repaired<br/>                     [2007-2013] There is a 6' crack at the east side of east cap with delamination beginning. Also some moderate horizontal cracking.<br/>                     [2002-2013] There is 3' of spalling located on top at the center with delamination &amp; rebar corrosion.</p> |   |                 |            |          |          |          |          |          |
| 311   | Movable Bearing                         | Routine         | 09/13/2016 | 32 EA    | 0        | 32       | 0        | 0        |
|   |   | Migrated Values |            | 32 EA    | 0        | 32       | 0        | 0        |
| <p>Notes: [2016] No deterioration in Bearings<br/>                     [2015] New bearings installed in 2014 with new pier walls<br/>                     [2010-2014] The north side bearings require cleaning &amp; lubrication. Bearings lubricated in 1982 should consider total replacement.<br/>                     [1983-2014] The north 16 bearings have moderate corrosion. [2001-2014] The south 16 bearings have advanced corrosion.<br/>                     No active rail on the south side of bridge. [2006-2013] Bolt is missing at the #19 bearing.</p>  |   |                 |            |          |          |          |          |          |
| 800   | Critical Deficiencies or Safety Hazards | Routine         | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        |
|   |   | Migrated Values |            | 1 EA     | 1        | 0        | 0        | 0        |
| <p>Notes: NO CRITICAL FINDINGS OBSERVED DURING THE LAST INSPECTION.</p>   |   |                 |            |          |          |          |          |          |
| 880   | Impact Damage                           | Routine         | 09/13/2016 | 1 EA     | 0        | 1        | 0        | 0        |
|   |   | Migrated Values |            | 1 EA     | 0        | 1        | 0        | 0        |
| <p>Notes: [2016] No impact damage.<br/>                     [2014] Repaired concrete columns, poured as two reinforced concrete pier walls.<br/>                     [2002-2013] Traffic impact on columns have occurred &amp; patched. Patches are letting loose. Recommend shot-crete rehabilitation.</p>   |   |                 |            |          |          |          |          |          |
| 883   | Concrete Shear Cracking                 | Routine         | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        |
|   |   | Migrated Values |            | 1 EA     | 1        | 0        | 0        | 0        |
| <p>Notes: [2016] No shear cracking present.<br/>                     Use this element to monitor the presence of shear cracking on concrete elements. Pay particular attention to the concrete pier caps.</p>   |   |                 |            |          |          |          |          |          |
| 891   | Other Bridge Signing                    | Routine         | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        |
|   |   | Migrated Values |            | 1 EA     | 1        | 0        | 0        | 0        |
| <p>Notes: [2016] Signing OK<br/>                     [2015] Hazard marker on SE corner has been installed.<br/>                     [2014] Hazard marker on SE corner needs to be installed.<br/>                     [2002-2015] All appropriate signs are in place.</p>   |   |                 |            |          |          |          |          |          |
| 892   | Slopes & Slope Protection               | Routine         | 09/13/2016 | 1 EA     | 0        | 1        | 0        | 0        |
|   |   | Migrated Values |            | 1 EA     | 0        | 1        | 0        | 0        |
| <p>Notes: [2014-2016] Ballast is over top of curb on SE &amp; NE corners &amp; should be cleaned off of roadway.<br/>                     [2011-2016] Minor erosion at the SW &amp; SE corners.<br/>                     The west slope has a new C.I.P. concrete retaining wall installed in 2010.<br/>                     [2009-2016] There is settlement of ballast slope protection at the east abutment.<br/>                     [2005-2014] Slight movement of grouted slope paving at the NW corner. Pre-cast concrete wingwall added to the NE &amp; NW corners in 2000.<br/>                     [2002-2013] Recommend timber boards at SW &amp; SE corners to retain ballast. Ballast is moving into the guardrail at the SE corner.</p>  |   |                 |            |          |          |          |          |          |
| 893   | Guardrail                               | Routine         | 09/13/2016 | 1 EA     | 0        | 0        | 0        | 1        |
|   |   | Migrated Values |            | 1 EA     | 0        | 0        | 0        | 1        |
| <p>Notes: [2015-2016] There are minor to moderate scrapes to guardrail on both sides.<br/>                     [2007-2014] There are minor scrapes to guardrail on both sides.<br/>                     [1983-2014] No guardrail on road departure side.<br/>                     [1994-2014] Guardrail system should be continuous under bridge.</p>   |   |                 |            |          |          |          |          |          |

**BRIDGE 656 CP RAIL OVER CSAH 76(SNELLING AV)**

| ELEM NBR  | ELEMENT NAME             | REPORT TYPE     | INSP. DATE | QUANTITY | QTY CS 1 | QTY CS 2 | QTY CS 3 | QTY CS 4 |
|---|--------------------------|-----------------|------------|----------|----------|----------|----------|----------|
| 894   | Deck & Approach Drainage | Routine         | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        |
|   |                          | Migrated Values |            | 1 EA     | 1        | 0        | 0        | 0        |
| Notes: [2016] Roadway under railroad.<br>Use this element to rate the condition, function, and adequacy of the drainage system.     |                          |                 |            |          |          |          |          |          |
| 900   | Protected Species        | Routine         | 09/13/2016 | 1 EA     | 1        | 0        | 0        | 0        |
|   |                          | Migrated Values |            | 1 EA     | 1        | 0        | 0        | 0        |
| Notes: [2016] No protective species found.<br>Use this element to track the presence of protected species living on this structure. |                          |                 |            |          |          |          |          |          |

General Notes: [2016] Bridge safety inspection was completed by Dan Bodelson & Randy Bussiere on 9/13/2016.  
 [2015] Bridge safety inspection was completed on 9/25/2015 by Dan Bodelson & Brian Essler  
 [2014] Bridge safety inspection was completed on 9/25/2014 by Dan Bodelson & Brian Essler  
 [2013] Bridge safety inspection was conducted on 9/25/2013 by Dan Bodelson & Brian Essler  
 [2012] Bridge safety inspection was completed by B. Wieman on 10/23/2012.  
 2011 Bridge safety inspection was conducted by B. Wieman on 10/21/2011.  
 2010 Bridge safety inspection was completed by B. Wieman on 11/10/2010.  
 Contractor installed retaining wall underneath west end of the bridge 2010.  
 2009 Bridge safety inspection was completed by B. Wieman on 8/3/2009. Graffiti is on abutments, pier columns & pier webs.  
 2008 Bridge safety inspection was completed by B. Wieman 10/21/2008. Graffiti is on abutments, pier columns & pier webs.  
 2007 Bridge safety inspection was completed by B. Wieman 8/28/2007.  
 2006 Bridge safety inspection was completed by Bret Wieman. 10/24/2006.  
 2006-2009 No railing on the south side of the bridge on top. The south 1/2 carries pedestrian traffic only.[2000] New catwalk was installed. Bottleneck condition exists on roadway under bridge 83-2009. South set of rail removed in 1988.  
 All new ties & decking installed in 1988.

- 58. Deck NBI: CSAH 76 (Snelling Ave.) under CP Rail  
No deck
  - 36A. Brdg Railings NBI: No bridge railing
  - 36B. Transitions NBI: Roadway under railroad.
  - 36C. Appr Guardrail NBI: Roadway under railroad.
  - 36D. Appr Guardrail Terminal NBI: Roadway under railroad.
  - 59. Superstructure NBI: Extensive rust & corrosion
  - 60. Substructure NBI: Major spalling on both abutments  
Columns have been repaired & made into two pier walls
  - 61. Channel NBI: Roadway under railroad.
  - 62. Culvert NBI: Roadway under railroad.
  - 71. Waterway Adeq NBI: Roadway under railroad.
  - 72. Appr Roadway Alignment NBI: Roadway under railroad.
- Inventory Notes:

Dan Bodelson  
Inspector's Signature

Nicklaus Fischer  
Reviewer's Signature

# Pictures



Photo 1 -



Photo 2 -



# Pictures



Photo 3 -



Photo 4 -



## Pictures



Photo 5 -



Photo 6 -



# Pictures



Photo 7 -



Photo 10 -

# Pictures



Photo 18 -

# Maintenance

| Element | Source Code | Work Code | Description | P/R | Priority | Work Order # | Year Due | Last Viewed | Entered | Start Date | Completed |
|---------|-------------|-----------|-------------|-----|----------|--------------|----------|-------------|---------|------------|-----------|
|---------|-------------|-----------|-------------|-----|----------|--------------|----------|-------------|---------|------------|-----------|



# BRIDGE STRUCTURAL ASSESSMENT REPORT

**PURPOSE:**

This report is a structural assessment of the structure and its ability to carry loads based on conditions identified in the attached bridge inspection report. The assessment is only a cursory review intended to provide guidance as to the relative hazards for structural conditions and deficiencies identified. This report is mandatory for all fracture critical bridges and is completed by the Minnesota Bridge Office upon receipt of the 7 Day FC Report; however, it is an OPTIONAL tool for agencies to utilize at their discretion for all other inspection types.

|  |  |
|--|--|
| BRIDGE NO.: 656  | BRIDGE OWNER: Railroad   |
| DATE INSPECTED: 09/13/2016   | STRUCTURE TYPE: Steel Continuous<br>tringer/Multi-beam or Girder   |
| FACILITY CARRIED: CP RAIL  | FEATURES INTERSECTED: CSAH 76(SNELLING AV)   |
| TYPE OF INSPECTION: <input checked="" type="checkbox"/> ROUTINE<br><input type="checkbox"/> FRACTURE CRITICAL<br><input type="checkbox"/> PINNED ASSEMBLY:<br><input type="checkbox"/> SPECIAL:<br><input type="checkbox"/> DAMAGE:<br><input type="checkbox"/> COMPLEX: |  |
| <u>Check all that apply:</u>   |  |
| Redundancy: <input type="checkbox"/> Load Path<br><input type="checkbox"/> Structural<br><input type="checkbox"/> Internal   | Connection Type: <input type="checkbox"/> Riveted<br><input type="checkbox"/> Bolted<br><input type="checkbox"/> Welded<br><input type="checkbox"/> Other: |

1. Was a critical finding identified during this inspection or upon structural review?  Yes  No
  - a) If selected "Yes" above, state briefly the finding(s):
  
2. If a critical finding was identified, what is the current status?  Pending  
 Resolved  
 N/A
  - a) Briefly state actions taken:
  
3. Does the condition of any bridge component indicate impaired function? Examples of bridge components with impaired function include elements that are: frozen or immovable, out-of-plumb or misaligned, distorted or structurally deformed, excessively deteriorated, cracked, broken, eroded or scoured.  Yes  No

a) If selected "Yes" above, state briefly the component(s) and condition(s):

4. Does the overall condition of the bridge, or any of its components mentioned in Question 3, suggest the need for detailed structural analysis and/or a revised load rating?  Yes  No

a) If selected "Yes", state the reason for this recommendation and indicate a proposed timeframe in accordance with State of Minnesota Rule 8810.9500 (Subpart 2):

5. Based on the structural assessment of these findings, recommendations include:

- Repair/Maintenance       Monitoring Plan  
 Complex                       Increased Inspection Frequency

Explain recommended actions:

6. Other comments:

**Bridge Office Reviewer**