## APPENDIX E NOISE AND VIBRATION

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**Reference Vibration Curve Adjustment Factors** 

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| Reference Vibration Curve Adjustment Factors (Existing Use) |  |                 |                                     |
|---|--|-----------------|-------------------------------------|
| Reference Curve Assumptions:                                |  |                 |                                     |
| Vehicle Type:   | Locomotive Powered Passenger or Freight  |                 |                                     |
| Speed (mph):  | 50                                       |                 |                                     |
| Track:  | Continuously Wel                         | ded Rail (CW)   | R)                                  |
| Geology:  | Normal soil, ineffi                      | cient at transn | nitting vibration                   |
| Traffic Condition A (                                       | <b>Chicago to Aurora</b>                 | ):              |                                     |
| Train Type:   | Locomotive Power                         | red Freight and | d Passenger                         |
| Speed (mph):  | 60                                       |                 |                                     |
| Track:  | CWR (same as ref                         | erence case)    |                                     |
| Geology:  | Till                                     | 149,704         | Linear Ft                           |
|   | Sand/Gravel/Sed                          | 31,583          | Linear Ft                           |
|   | Total                                    | 181,287         | Linear Ft                           |
| Reference Curve Adjustment Factors:                         |  |                 |                                     |
| Increased Speed:  | 1.6                                      | dB, calc. per   | FTA guidance                        |
| Track:  | 0  | dB              | -                                   |
| Geology:  | 10                                       | dB, for till (e | efficient soil)                     |
|   | 0  | dB, for sand    | /gravel/sediment (inefficient soil) |
|   | 8.3                                      | dB, weighte     | d average over section              |
| Total Adjustments:  | 9.8                                      | dB              | ç                                   |
| <b>Traffic Condition B</b> (                                | Aurora to Wyanet)                        | :               |                                     |
| Train Type:   | Locomotive Powered Freight and Passenger |                 | d Passenger                         |
| Speed (mph):  | 70                                       | -               | -                                   |
| Track:  | CWR (same as ref                         | erence case)    |                                     |
| Geology:  | Till                                     | 299,141         | Linear Ft                           |
|   | Sand/Gravel/Sed                          | 105,188         | Linear Ft                           |
|   | Total                                    | 404,329         | Linear Ft                           |
| Reference Curve Adju  | stment Factors:                          |                 |                                     |
| Increased Speed:  | 2.9                                      | dB, calc. per   | FTA guidance                        |
| Track:  | 0  | dB              | č                                   |
| Geology:  | 10                                       | dB, for till (e | efficient soil)                     |
|   | 0  |                 | /gravel/sediment (inefficient soil) |
|   | 7.4                                      | -               | d average over section              |
| Total Adjustments:  | 10.3                                     | dB              | 6                                   |
| <b>J</b>  |  |                 |                                     |

 Table 1

 Reference Vibration Curve Adjustment Factors (Existing Use)

| Traffic Condition C (               | Traffic Condition C (Wyanet to Silvis):                   |   |  |
|-------------------------------------|---|---|--|
| Train Type:                         | Locomotive Powered Freight (no existing passenger trains) |   |  |
| Speed (mph):                        | 35  |   |  |
| Track:                              | CWR (same as ref  | Carance case)                                   |  |
|                                     | Till  | 118,423 Linear Ft                               |  |
| Geology:                            | Sand/Gravel/Sed   |   |  |
|                                     |   |   |  |
| Defense Come Adia                   | Total   | 229,300 Linear Ft                               |  |
| Reference Curve Adju                |   |   |  |
| Increased Speed:                    | -3.1  | dB, calc. per FTA guidance                      |  |
| Track:                              | 0   |   |  |
| Geology:                            | 10  | dB, for till (efficient soil)                   |  |
|                                     | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|                                     | 5.2   | dB, weighted average over section               |  |
| Total Adjustments:                  | 2.1   | dB  |  |
| <b><u>Traffic Condition D</u></b> ( |   |   |  |
| Train Type:                         |   | red Freight (no existing passenger trains)      |  |
| Speed (mph):                        | 5   |   |  |
| Track:                              | CWR (same as ref  |   |  |
| Geology:                            | Till  | 41,934 Linear Ft                                |  |
|                                     | Sand/Gravel/Sed   | 14,437 Linear Ft                                |  |
|                                     | Total   | 56,371 Linear Ft                                |  |
| Reference Curve Adju                | stment Factors:   |   |  |
| Increased Speed:                    | -20.0   | dB, calc. per FTA guidance                      |  |
| Track:                              | 0   | dB  |  |
| Geology:                            | 10  | dB, for till (efficient soil)                   |  |
|                                     | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|                                     | 7.4   | dB, weighted average over section               |  |
| Total Adjustments:                  | -12.6   | dB  |  |
| Traffic Condition E (               | <b>Rock Island to Iow</b>                                 | a City):  |  |
| Train Type:                         |   | red Freight (no existing passenger trains)      |  |
| Speed (mph):                        | 35  |   |  |
| Track:                              | CWR (same as reference case)                              |   |  |
| Geology:                            | Till  | 0 Linear Ft                                     |  |
|                                     | Sand/Gravel/Sed   | 268,415 Linear Ft                               |  |
|                                     | Total   | 268,415 Linear Ft                               |  |
| Reference Curve Adju                |   |   |  |
| Increased Speed:                    | -3.1  | dB, calc. per FTA guidance                      |  |
| Track:                              | 0   | dB  |  |
| Geology:                            | 10  | dB, for till (efficient soil)                   |  |
| G0005y.                             | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|                                     | 0.0   | dB, weighted average over section               |  |
| Total Adjustments                   |   | • •   |  |
| Total Adjustments:                  | -3.1  | dB  |  |

Table 1 (continued)

|                              |   | r (continued)  |  |
|------------------------------|---|--|--|
| <b>Traffic Condition F</b> ( |   |  |  |
| Train Type:                  | Locomotive Powered Freight (no existing passenger trains)                 |  |  |
| Speed (mph):                 | 5   |  |  |
| Track:                       | CWR (same as ref  | Perence case)  |  |
| Geology:                     | Till 0 Linear Ft  |  |  |
|                              | Sand/Gravel/Sed   | 14,129 Linear Ft   |  |
|                              | Total   | 14,129 Linear Ft   |  |
| Reference Curve Adju         | stment Factors:   |  |  |
| Increased Speed:             | -20.0   | dB, calc. per FTA guidance   |  |
| Track:                       | 0   | dB   |  |
| Geology:                     | 10  | dB, for till (efficient soil)  |  |
| 67                           | 0   | dB, for sand/gravel/sediment (inefficient soil)                                  |  |
|                              | 0.0   | dB, weighted average over section  |  |
| Total Adjustments:           | -20.0   | dB   |  |
| <b>Traffic Condition G</b>   |   |  |  |
| Train Type:                  |   | red Freight (no existing passenger trains)                                       |  |
| Speed (mph):                 | 35  |  |  |
| Track:                       | CWR (same as ref  | erence case)   |  |
| Geology:                     | Till  | 0 Linear Ft  |  |
| 0001059.                     | Sand/Gravel/Sed   | 589,517 Linear Ft  |  |
|                              | Total   | <u>589,517</u> Linear Ft   |  |
| Reference Curve Adju         |   |  |  |
| Increased Speed:             | -3.1  | dB, calc. per FTA guidance   |  |
| Track:                       | 0   | dB   |  |
| Geology:                     | 10  | dB, for till (efficient soil)  |  |
| 0001059.                     | 0   | dB, for sand/gravel/sediment (inefficient soil)                                  |  |
|                              | 0.0   | dB, weighted average over section  |  |
| Total Adjustments:           | -3.1  | dB   |  |
| Traffic Condition H          |   | db   |  |
| Train Type:                  | (Des Momes):<br>Locomotive Powered Freight (no existing passenger trains) |  |  |
| Speed (mph):                 | 10  | red i reight (no existing passenger trains)                                      |  |
| Track:                       | CWR (same as ref  | Parance case)  |  |
| Geology:                     | Till  | 0 Linear Ft  |  |
| Ocology.                     | Sand/Gravel/Sed   | 73,699 Linear Ft   |  |
|                              | Total   | 73,699 Linear Ft   |  |
| Reference Curve Adju         |   |  |  |
| 0                            | -14.0   | dB calc per ETA guidance   |  |
| Increased Speed:<br>Trock:   |   | dB, calc. per FTA guidance   |  |
| Track:                       | 0   | dB<br>dB for till (afficient soil)   |  |
| Geology:                     | 10  | dB, for till (efficient soil)<br>dB, for sand/graval/ordiment (inafficient soil) |  |
|                              | 0   | dB, for sand/gravel/sediment (inefficient soil)                                  |  |
|                              | 0.0   | dB, weighted average over section  |  |
| Total Adjustments:           | -14.0   | dB   |  |

| Table 1 ( | continued) |
|-----------|------------|
|-----------|------------|

| Traffic Condition I (W. Des Moines to Council Bluffs): |   |   |  |
|--|---|---|--|
| Train Type:  | Locomotive Powered Freight (no existing passenger trains) |   |  |
| Speed (mph):   | 35  |   |  |
| Track:   | CWR (same as refe   | erence case)                                    |  |
| Geology:   | Till  | 0 Linear Ft                                     |  |
|  | Sand/Gravel/Sed   | 653,157 Linear Ft                               |  |
|  | Total   | 653,157 Linear Ft                               |  |
| Reference Curve Adjus                                  | stment Factors:   |   |  |
| Increased Speed:                                       | -3.1  | dB, calc. per FTA guidance                      |  |
| Track:   | 0   | dB  |  |
| Geology:   | 10  | dB, for till (efficient soil)                   |  |
|  | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|  | 0.0   | dB, weighted average over section               |  |
| Total Adjustments:                                     | -3.1  | dB  |  |
| Traffic Condition J (Council Bluffs to Omaha):         |   |   |  |
| Train Type:  | Locomotive Powered Freight (no existing passenger trains) |   |  |
| Speed (mph):   | 10  |   |  |
| Track:   | CWR (same as reference case)                              |   |  |
| Geology:   | Till  | 16,353 Linear Ft                                |  |
|  | Sand/Gravel/Sed   | 86,094 Linear Ft                                |  |
|  | Total   | 102,447 Linear Ft                               |  |
| Reference Curve Adjustment Factors:                    |   |   |  |
| Increased Speed:                                       | -14.0   | dB, calc. per FTA guidance                      |  |
| Track:   | 0   | dB  |  |
| Geology:   | 10  | dB, for till (efficient soil)                   |  |
|  | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|  | 1.6   | dB, weighted average over section               |  |
| Total Adjustments:                                     | -12.4   | dB  |  |

## Table 1 (continued)



Tier 1 Service Level EIS

| Reference Vibration Curve Adjustment Factors (Future No-build Condition) |   |   |  |
|--|---|---|--|
| Reference Curve Assumptions:   |   |   |  |
| Vehicle Type:  | Locomotive Powered Passenger or Freight |   |  |
| Speed (mph):   | 50                                      |   |  |
| Track:   | Continuously Wel                        | ded Rail (CWR)                                  |  |
| Geology:   | Normal soil, ineffi                     | cient at transmitting vibration                 |  |
| Traffic Condition A (  | Chicago to Aurora                       | ):  |  |
| Train Type:  | Locomotive Power                        | red Freight and Passenger                       |  |
| Speed (mph):   | 60                                      |   |  |
| Track:   | CWR (same as ref                        | erence case)                                    |  |
| Geology:   | Till                                    | 149,704 Linear Ft                               |  |
|  | Sand/Gravel/Sed                         | 31,583 Linear Ft                                |  |
|  | Total                                   | 181,287 Linear Ft                               |  |
| Reference Curve Adjustment Factors:                                      |   |   |  |
| Increased Speed:   | 1.6                                     | dB, calc. per FTA guidance                      |  |
| Track:   | 0                                       | dB  |  |
| Geology:   | 10                                      | dB, for till (efficient soil)                   |  |
|  | 0                                       | dB, for sand/gravel/sediment (inefficient soil) |  |
|  | 8.3                                     | dB, weighted average over section               |  |
| Total Adjustments:   | 9.8                                     | dB  |  |
| <b>Traffic Condition B</b> (   | Aurora to Wyanet)                       | <u>:</u>  |  |
| Train Type:  | Locomotive Power                        | red Freight and Passenger                       |  |
| Speed (mph):   | 70                                      |   |  |
| Track:   | CWR (same as ref                        | erence case)                                    |  |
| Geology:   | Till                                    | 299,141 Linear Ft                               |  |
|  | Sand/Gravel/Sed                         | 105,188 Linear Ft                               |  |
|  | Total                                   | 404,329 Linear Ft                               |  |
| Reference Curve Adju   | stment Factors:                         |   |  |
| Increased Speed:   | 2.9                                     | dB, calc. per FTA guidance                      |  |
| Track:   | 0                                       | dB  |  |
| Geology:   | 10                                      | dB, for till (efficient soil)                   |  |
|  | 0                                       | dB, for sand/gravel/sediment (inefficient soil) |  |
|  | 7.4                                     | dB, weighted average over section               |  |
| Total Adjustments:   | 10.3                                    | dB  |  |

 Table 2

 Reference Vibration Curve Adjustment Factors (Future No-build Condition)

| Traffic Condition C (Wyanet to Silvis): |   |   |  |
|---|---|---|--|
| Train Type:                             | Locomotive Powered Freight (no existing passenger trains) |   |  |
| Speed (mph):                            | 35  |   |  |
| Track:                                  | CWR (same as refe   | erence case)                                    |  |
| Geology:                                | Till 118,423 Linear Ft                                    |   |  |
|   | Sand/Gravel/Sed   | 110,877 Linear Ft                               |  |
|   | Total   | 229,300 Linear Ft                               |  |
| Reference Curve Adjus                   | tment Factors:  |   |  |
| Increased Speed:                        | -3.1  | dB, calc. per FTA guidance                      |  |
| Track:                                  | 0   | dB  |  |
| Geology:                                | 10  | dB, for till (efficient soil)                   |  |
|   | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
|   | 5.2   | dB, weighted average over section               |  |
| Total Adjustments:                      | 2.1   | dB  |  |
| Traffic Condition D (S                  |   |   |  |
| Train Type:                             |   | red Freight (no existing passenger trains)      |  |
| Speed (mph):                            | 5   | ted i forgitt (no existing pussenger trains)    |  |
| Track:                                  | CWR (same as refe   | erence case)                                    |  |
| Geology:                                | Till  | 41,934 Linear Ft                                |  |
| Ocology.                                | Sand/Gravel/Sed   | 14,437 Linear Ft                                |  |
|   | Total   | 56,371 Linear Ft                                |  |
| Deference Curve Adius                   |   | 50,571 Elilear I't                              |  |
| Reference Curve Adjus                   | -20.0   | dP cale por ETA guidance                        |  |
| Increased Speed:<br>Track:              | -20.0   | dB, calc. per FTA guidance<br>dB                |  |
|   | 0<br>10   |   |  |
| Geology:                                |   | dB, for till (efficient soil)                   |  |
|   | 0   | dB, for sand/gravel/sediment (inefficient soil) |  |
| T ( 1 A 1' )                            | 7.4   | dB, weighted average over section               |  |
| Total Adjustments:                      | -12.6   | dB  |  |
|   | (Rock Island to Iowa City):                               |   |  |
| Train Type:                             |   | red Freight (no existing passenger trains)      |  |
| Speed (mph):                            | 35  |   |  |
| Track:                                  | CWR (same as ref  |   |  |
| Geology:                                | Till  | 0 Linear Ft                                     |  |
|   | Sand/Gravel/Sed   | <u>268,415</u> Linear Ft                        |  |
|   | Total   | 268,415 Linear Ft                               |  |
| Reference Curve Adjus                   |   |   |  |
| Increased Speed:                        | -3.1  | dB, calc. per FTA guidance                      |  |
|   | 0   | dB  |  |
| Track:                                  |   |   |  |
| Track:<br>Geology:                      | 10  | dB, for till (efficient soil)                   |  |
|   |   |   |  |
|   | 10  | dB, for till (efficient soil)                   |  |

| Traffic Condition E   | Iowa City):   | · · ·  |  |
|-----------------------|---|--|--|
| Traffic Condition F ( |   | and Engight (no existing account of the inclusion) |  |
| Train Type:           | Locomotive Powered Freight (no existing passenger trains) |  |  |
| Speed (mph):          | 5   | <b>、</b>   |  |
| Track:                | CWR (same as ref  |  |  |
| Geology:              | Till  | 0 Linear Ft  |  |
|                       | Sand/Gravel/Sed   | <u>14,129</u> Linear Ft                            |  |
|                       | Total   | 14,129 Linear Ft                                   |  |
| Reference Curve Adju  | stment Factors:   |  |  |
| Increased Speed:      | -20.0   | dB, calc. per FTA guidance                         |  |
| Track:                | 0   | dB   |  |
| Geology:              | 10  | dB, for till (efficient soil)                      |  |
| 0.5                   | 0   | dB, for sand/gravel/sediment (inefficient soil)    |  |
|                       | 0.0   | dB, weighted average over section                  |  |
| Total Adjustments:    | -20.0   | dB   |  |
| Traffic Condition G   |   |  |  |
| Train Type:           |   | red Freight (no existing passenger trains)         |  |
| Speed (mph):          | 35  | red i feight (no existing passenger trains)        |  |
| Track:                | CWR (same as ref  | Caranca casa)                                      |  |
|                       | Till  | 0 Linear Ft  |  |
| Geology:              | Sand/Gravel/Sed   |  |  |
|                       |   | <u>589,517</u> Linear Ft                           |  |
|                       | Total   | 589,517 Linear Ft                                  |  |
| Reference Curve Adju  |   |  |  |
| Increased Speed:      | -3.1  | dB, calc. per FTA guidance                         |  |
| Track:                | 0   | dB   |  |
| Geology:              | 10  | dB, for till (efficient soil)                      |  |
|                       | 0   | dB, for sand/gravel/sediment (inefficient soil)    |  |
|                       | 0.0   | dB, weighted average over section                  |  |
| Total Adjustments:    | -3.1  | dB   |  |
| Traffic Condition H   | (Des Moines):   |  |  |
| Train Type:           | Locomotive Powe   | red Freight (no existing passenger trains)         |  |
| Speed (mph):          | 10  |  |  |
| Track:                | CWR (same as ref  | erence case)                                       |  |
| Geology:              | Till  | 0 Linear Ft  |  |
|                       | Sand/Gravel/Sed   | 73,699 Linear Ft                                   |  |
|                       | Total   | 73,699 Linear Ft                                   |  |
| Reference Curve Adju  |   |  |  |
| Increased Speed:      | -14.0   | dB, calc. per FTA guidance                         |  |
| Track:                | 0   | dB   |  |
| Geology:              | 10  | dB, for till (efficient soil)                      |  |
| Geology.              | 0   | dB, for sand/gravel/sediment (inefficient soil)    |  |
|                       | 0.0   |  |  |
| Total A divertments   |   | dB, weighted average over section                  |  |
| Total Adjustments:    | -14.0   | dB   |  |

Table 2 (continued)

| Traffic Condition I (W. Des Moines to Council Bluffs): |   |                              |                                     |
|--|---|------------------------------|-------------------------------------|
| Train Type:  | Locomotive Powered Freight (no existing passenger trains) |                              |                                     |
| Speed (mph):   | 35  |                              |                                     |
| Track:   | CWR (same as refe   | erence case)                 |                                     |
| Geology:   | Till  | 0                            | Linear Ft                           |
|  | Sand/Gravel/Sed   | 653,157                      | Linear Ft                           |
|  | Total   | 653,157                      | Linear Ft                           |
| Reference Curve Adjus                                  | stment Factors:   |                              |                                     |
| Increased Speed:                                       | -3.1  | dB, calc. per                | FTA guidance                        |
| Track:   | 0   | dB                           |                                     |
| Geology:   | 10  | dB, for till (e              | ,                                   |
|  | 0   | dB, for sand/                | /gravel/sediment (inefficient soil) |
|  | 0.0   | dB, weighted                 | d average over section              |
| Total Adjustments:                                     | -3.1  | dB                           |                                     |
| Traffic Condition J (                                  | Council Bluffs to O                                       | <u>maha):</u>                |                                     |
| Train Type:  | Locomotive Powered Freight (no existing passenger trains) |                              |                                     |
| Speed (mph):   | 10  |                              |                                     |
| Track:   | CWR (same as refe   | CWR (same as reference case) |                                     |
| Geology:   | Till  | 16,353                       | Linear Ft                           |
|  | Sand/Gravel/Sed   | 86,094                       | Linear Ft                           |
|  | Total   | 102,447                      | Linear Ft                           |
| Reference Curve Adjustment Factors:                    |   |                              |                                     |
| Increased Speed:                                       | -14.0   | dB, calc. per                | FTA guidance                        |
| Track:   | 0   | dB                           |                                     |
| Geology:   | 10  | dB, for till (e              | ·                                   |
|  | 0   | dB, for sand/                | /gravel/sediment (inefficient soil) |
|  | 1.6   | dB, weighted                 | d average over section              |
| Total Adjustments:                                     | -12.4   | dB                           |                                     |

## Table 2 (continued)



Chart 2

| Reference vibration curve Adjustment Factors (Future Build Condition) |   |   |  |
|---|---|---|--|
| Reference Curve Assumptions:  |   |   |  |
| Vehicle Type:   | Locomotive Powered Passenger or Freight |   |  |
| Speed (mph):  | 50                                      |   |  |
| Track:  | Continuously Weld                       | ded Rail (CWR)                                  |  |
| Geology:  | Normal soil, ineffi                     | cient at transmitting vibration                 |  |
| Traffic Condition A (   | Chicago to Aurora                       | ):  |  |
| Train Type:   | Locomotive Power                        | red Freight and Passenger                       |  |
| Speed (mph):  | 60                                      |   |  |
| Track:  | CWR (same as ref                        | erence case)                                    |  |
| Geology:  | Till                                    | 149,704 Linear Ft                               |  |
|   | Sand/Gravel/Sed                         | 31,583 Linear Ft                                |  |
|   | Total                                   | 181,287 Linear Ft                               |  |
| Reference Curve Adjustment Factors:                                   |   |   |  |
| Increased Speed:  | 1.6                                     | dB, calc. per FTA guidance                      |  |
| Track:  | 0                                       | dB  |  |
| Geology:  | 10                                      | dB, for till (efficient soil)                   |  |
|   | 0                                       | dB, for sand/gravel/sediment (inefficient soil) |  |
|   | 8.3                                     | dB, weighted average over section               |  |
| Total Adjustments:  | 9.8                                     | dB  |  |
| <b>Traffic Condition B</b> (  | Aurora to Wyanet)                       | :   |  |
| Train Type:   |   | red Freight and Passenger                       |  |
| Speed (mph):  | 100                                     |   |  |
| Track:  | CWR (same as ref                        | erence case)                                    |  |
| Geology:  | Till                                    | 299,141 Linear Ft                               |  |
|   | Sand/Gravel/Sed                         | 105,188 Linear Ft                               |  |
|   | Total                                   | 404,329 Linear Ft                               |  |
| Reference Curve Adjus   | stment Factors:                         |   |  |
| Increased Speed:  | 6.0                                     | dB, calc. per FTA guidance                      |  |
| Track:  | 0                                       | dB  |  |
| Geology:  | 10                                      | dB, for till (efficient soil)                   |  |
|   | 0                                       | dB, for sand/gravel/sediment (inefficient soil) |  |
|   | 7.4                                     | dB, weighted average over section               |  |
| Total Adjustments:  | 13.4                                    | dB  |  |
| 5   |   |   |  |

 Table 3

 Reference Vibration Curve Adjustment Factors (Future Build Condition)

| Traffic Condition C  |  |   |  |
|----------------------|--|---|--|
| Train Type:          | Locomotive Powered Freight and Passenger |   |  |
| Speed (mph):         | 100                                      |   |  |
| Track:               | CWR (same as ref                         | erence case)                                    |  |
| Geology:             | Till                                     | 118,423 Linear Ft                               |  |
|                      | Sand/Gravel/Sed                          | 110,877 Linear Ft                               |  |
|                      | Total                                    | 229,300 Linear Ft                               |  |
| Reference Curve Adju | stment Factors:                          |   |  |
| Increased Speed:     | 6.0                                      | dB, calc. per FTA guidance                      |  |
| Track:               | 0  | dB  |  |
| Geology:             | 10                                       | dB, for till (efficient soil)                   |  |
|                      | 0  | dB, for sand/gravel/sediment (inefficient soil) |  |
|                      | 5.2                                      | dB, weighted average over section               |  |
| Total Adjustments:   | 11.2                                     | dB  |  |
| Traffic Condition D  |  |   |  |
| Train Type:          |  | red Freight and Passenger                       |  |
| Speed (mph):         | 40                                       |   |  |
| Track:               | CWR (same as ref                         | erence case)                                    |  |
| Geology:             | Till                                     | 41,934 Linear Ft                                |  |
|                      | Sand/Gravel/Sed                          | ,   |  |
|                      | Total                                    | 56,371 Linear Ft                                |  |
| Reference Curve Adju |  |   |  |
| Increased Speed:     | -1.9                                     | dB, calc. per FTA guidance                      |  |
| Track:               | 0  | dB  |  |
| Geology:             | 10                                       | dB, for till (efficient soil)                   |  |
| 05                   | 0  | dB, for sand/gravel/sediment (inefficient soil) |  |
|                      | 7.4                                      | dB, weighted average over section               |  |
| Total Adjustments:   | 5.5                                      | dB  |  |
| ě                    | (Rock Island to Iowa City):              |   |  |
| Train Type:          |  | red Freight and Passenger                       |  |
| Speed (mph):         | 100                                      |   |  |
| Track:               | CWR (same as reference case)             |   |  |
| Geology:             | Till                                     | 0 Linear Ft                                     |  |
|                      | Sand/Gravel/Sed                          | 268,415 Linear Ft                               |  |
|                      | Total                                    | 268,415 Linear Ft                               |  |
| Reference Curve Adju |  | ·   |  |
| Increased Speed:     | 6.0                                      | dB, calc. per FTA guidance                      |  |
| Track:               | 0  | dB  |  |
| Geology:             | 10                                       | dB, for till (efficient soil)                   |  |
|                      | 0  | dB, for sand/gravel/sediment (inefficient soil) |  |
|                      | 0.0                                      | dB, weighted average over section               |  |
| Total Adjustments:   | 6.0                                      | dB  |  |
|                      | 5.0                                      |   |  |

Table 3 (continued)

| Traffic Condition F  |                                     |   |  |  |
|--|-------------------------------------|---|--|--|
| Train Type:  |                                     | red Freight and Passenger                       |  |  |
| Speed (mph):   | 40                                  |   |  |  |
| Track:   | CWR (same as reference case)        |   |  |  |
| Geology:   | Till                                | 0 Linear Ft                                     |  |  |
|  | Sand/Gravel/Sed                     | 14,129 Linear Ft                                |  |  |
|  | Total                               | 14,129 Linear Ft                                |  |  |
| Reference Curve Adju   | stment Factors:                     |   |  |  |
| Increased Speed:   | -1.9                                | dB, calc. per FTA guidance                      |  |  |
| Track:   | 0                                   | dB  |  |  |
| Geology:   | 10                                  | dB, for till (efficient soil)                   |  |  |
|  | 0                                   | dB, for sand/gravel/sediment (inefficient soil) |  |  |
|  | 0.0                                 | dB, weighted average over section               |  |  |
| Total Adjustments:   | -1.9                                | dB  |  |  |
|  |                                     |   |  |  |
| Traffic Condition G (Iowa City to E. Des Moines):Train Type:Locomotive Powered Freight and Passenger |                                     |   |  |  |
| Speed (mph):   |                                     | ieu Preigin allu i asseliger                    |  |  |
| Track:   | 100<br>CWR (same as reference case) |   |  |  |
|  |                                     |   |  |  |
| Geology:   | Till                                | 0 Linear Ft                                     |  |  |
|  | Sand/Gravel/Sed                     | <u>589,517</u> Linear Ft                        |  |  |
|  | Total                               | 589,517 Linear Ft                               |  |  |
| Reference Curve Adju   |                                     |   |  |  |
| Increased Speed:   | 6.0                                 | dB, calc. per FTA guidance                      |  |  |
| Track:   | 0                                   | dB  |  |  |
| Geology:   | 10                                  | dB, for till (efficient soil)                   |  |  |
|  | 0                                   | dB, for sand/gravel/sediment (inefficient soil) |  |  |
|  | 0.0                                 | dB, weighted average over section               |  |  |
| Total Adjustments:   | 6.0                                 | dB  |  |  |
| <b>Traffic Condition H</b>   | (Des Moines):                       |   |  |  |
| Train Type:  |                                     | red Freight and Passenger                       |  |  |
| Speed (mph):   | 40                                  |   |  |  |
| Track:   | CWR (same as ref                    | erence case)                                    |  |  |
| Geology:   | Till                                | 0 Linear Ft                                     |  |  |
|  | Sand/Gravel/Sed                     | 73,699 Linear Ft                                |  |  |
|  | Total                               | 73,699 Linear Ft                                |  |  |
| Reference Curve Adju   |                                     |   |  |  |
| Increased Speed:   | -1.9                                | dB, calc. per FTA guidance                      |  |  |
| Track:   | 0                                   | dB  |  |  |
| Geology:   | 10                                  | dB, for till (efficient soil)                   |  |  |
|  | 0                                   | dB, for sand/gravel/sediment (inefficient soil) |  |  |
|  | 0.0                                 | dB, weighted average over section               |  |  |
| Total Adjustments  |                                     |   |  |  |
| Total Adjustments:   | -1.9                                | dB  |  |  |

Table 3 (continued)

| Traffic Condition I (W. Des Moines to Council Bluffs): |  |   |  |  |
|--|--|---|--|--|
| Train Type:  | Locomotive Powered Freight and Passenger |   |  |  |
| Speed (mph):   | 100                                      |   |  |  |
| Track:   | CWR (same as reference case)             |   |  |  |
| Geology:   | Till                                     | 0 Linear Ft                                     |  |  |
|  | Sand/Gravel/Sed                          | 653,157 Linear Ft                               |  |  |
|  | Total                                    | 653,157 Linear Ft                               |  |  |
| Reference Curve Adjustment Factors:                    |  |   |  |  |
| Increased Speed:                                       | 6.0                                      | dB, calc. per FTA guidance                      |  |  |
| Track:   | 0  | dB  |  |  |
| Geology:   | 10                                       | dB, for till (efficient soil)                   |  |  |
|  | 0  | dB, for sand/gravel/sediment (inefficient soil) |  |  |
|  | 0.0                                      | dB, weighted average over section               |  |  |
| Total Adjustments:                                     | 6.0                                      | dB  |  |  |
| Traffic Condition J (Council Bluffs to Omaha):         |  |   |  |  |
| Train Type:  | Locomotive Powered Freight and Passenger |   |  |  |
| Speed (mph):   | 40                                       |   |  |  |
| Track:   | CWR (same as reference case)             |   |  |  |
| Geology:   | Till                                     | 16,353 Linear Ft                                |  |  |
|  | Sand/Gravel/Sed                          | 86,094 Linear Ft                                |  |  |
|  | Total                                    | 102,447 Linear Ft                               |  |  |
| Reference Curve Adjust                                 | stment Factors:                          |   |  |  |
| Increased Speed:                                       | -1.9                                     | dB, calc. per FTA guidance                      |  |  |
| Track:   | 0  | dB  |  |  |
| Geology:   | 10                                       | dB, for till (efficient soil)                   |  |  |
|  | 0  | dB, for sand/gravel/sediment (inefficient soil) |  |  |
|  | 1.6                                      | dB, weighted average over section               |  |  |
| Total Adjustments:                                     | -0.3                                     | dB  |  |  |

## Table 3 (continued)



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