

## 610 Extension Project in Maple Grove, Traffic Noise Analysis

The City of Maple Grove conducted a traffic noise study for the 610 Extension Project (SP 189-143-001 and SP 2780-105). The proposed project includes federal-aid funding; therefore, the proposed project must comply with the noise requirements set by the Federal Highway Administration (FHWA) in 23 CFR 772 (Procedures for Abatement of Highway Traffic Noise and Construction Noise). A traffic noise analysis is required with the 610 Extension Project because of the new roadway connection between County State Aid Highway (CSAH) 30 and Highway 610, the addition of interchange ramps to Interstate 94 (I-94), and auxiliary lanes on eastbound and westbound I-94 between Maple Grove Parkway and the proposed 610 extension. Modeled traffic noise levels under future (2040) conditions with the proposed project would exceed the Federal noise abatement criterion at trail receptor locations along the 610 extension, CSAH 30, and Lawndale Lane. Noise abatement measures (i.e., noise walls) are considered at trail receptor locations where predicted noise levels approach or exceed the Federal noise abatement criterion.

### Noise Wall Solicitation Summary

The City of Maple Grove is responsible for voting on 16 of the noise walls with the 610 Extension Project. This is because the City of Maple Grove is the trail authority for existing and proposed trails and the property owner for the proposed 610 extension.

### CSAH 30 & 610 Extension Noise Walls

Four noise walls are proposed along existing CSAH 30 between Brockton Lane (CSAH 101) and Troy Lane. Two noise walls are proposed along the 610 extension between Troy Lane and CSAH 30. One noise wall is proposed along the north side of CSAH 30 between the 610 extension and Lawndale Lane. These noise walls shield existing and proposed trails. There are no other benefited receptors behind these noise walls.

Hennepin County is the trail property owner and the City of Maple Grove is the trail authority for noise wall voting. Hennepin County holds a majority of the voting points for the seven noise walls along CSAH 30 and the 610 extension.

- If Hennepin County and the City of Maple Grove vote yes, then the noise walls will be constructed.
- If Hennepin County and the City of Maple Grove vote no, then the noise walls will be removed from the project and will not be constructed.
- If Hennepin County and the City of Maple Grove do not vote with this first solicitation period, then a second solicitation period is required. If Hennepin County and the City of Maple Grove do not vote after the second solicitation period, then the noise walls will be removed from the project and not constructed.
- Hennepin County holds a majority of the voting points for these noise walls. A Hennepin County response (yes or no) will determine the outcome. A City of Maple Grove response (yes

or no) will determine the outcome after the second solicitation period only if Hennepin County does not provide a response.

### **CSAH 30 Noise Walls**

One noise wall is proposed on the south side of CSAH 30 between Queensland Lane and Peony Lane. One noise wall is proposed on the south side of CSAH 30 between Peony Lane and Lawndale Lane. These two noise walls shield an existing trail along CSAH 30. There are benefited residential receptors behind both noise walls.

Hennepin County is the trail property owner and the City of Maple Grove is the trail authority for noise wall voting. The benefited residential property owners, residents, and townhome association are included with the noise wall voting.

- The benefited residents/property owners and townhome association hold a majority of voting points for both noise walls. If the benefited residents/property owners and townhome association all vote yes, then the noise walls will be constructed. If the benefited residents/property owners and townhome association all vote no, then the noise walls will be removed from the project and not constructed.
- The one scenario where Hennepin County and the City of Maple Grove could determine the outcome is if the benefited residents/property owners and townhome association do not respond.

### **610 Extension & Lawndale Lane Noise Walls**

Three noise walls are proposed along the 610 extension between CSAH 30 and I-94. Four noise walls are proposed along Lawndale Lane between 101<sup>st</sup> Avenue and CSAH 30. These noise walls shield existing and proposed trails. There are no other benefited receptors behind these noise walls. The City of Maple Grove is the trail property owner and trail authority for noise wall voting. The City of Maple Grove holds all of the voting points and will determine the outcome for the seven noise walls along the 610 extension and Lawndale Lane.

- If the City of Maple Grove votes yes, then the noise walls will be constructed.
- If the City of Maple Grove votes no, then the noise walls will be removed from the project and not constructed.
- If the City of Maple Grove does not vote with this first solicitation period, then a second solicitation period is required. If the City of Maple Grove does not vote after the second solicitation period, then the noise walls will be removed from the project and not constructed.

## 610 Extension Project Noise Wall Evaluation

The 2017 Minnesota Department of Transportation (MnDOT) Noise Requirements for federal-aid highway projects describes the process for evaluating noise walls. The factors for evaluating noise wall feasibility and reasonableness are summarized below. Detailed information regarding MnDOT's noise requirements and noise wall criteria can be found on MnDOT's noise webpage at <http://www.dot.state.mn.us/environment/noise/index.html>.

### Noise Wall Feasibility and Reasonableness

#### Noise Wall Feasibility

##### Acoustic Feasibility

For a noise barrier to be considered acoustically effective, it must achieve a noise reduction of at least 5 dBA. At least one receptor adjacent to the noise wall must meet the minimum 5 dBA reduction for a noise wall to achieve acoustic feasibility.

##### Engineering Feasibility

Engineering feasibility addresses if it is possible to design and construct a proposed noise wall. The traffic noise analysis for the proposed 610 Extension Project assumes that noise walls are feasible with respect to engineering/constructability.

#### Noise Wall Reasonableness

##### Noise Reduction Design Goal

A minimum 7 dBA reduction must be achieved for at least one benefited receptor behind the noise barrier to meet noise reduction design goals.

##### Noise Wall Cost Effectiveness

The cost of a noise barrier is calculated using an estimated construction cost of \$36 per square foot of noise wall. This price is for an acoustically absorbent concrete post/concrete panel type noise wall. To be considered cost-effective, the cost per individual benefited receptor must be equal to or less than \$78,500 per receptor.

##### Noise Wall Solicitation

Noise wall solicitation (i.e., voting) from benefited receptors is only conducted when a modeled noise wall:

1. Is feasible (provides at least a 5 dBA reduction at a minimum of one receptor adjacent to the noise wall);

2. Meets the noise reduction design goal (provides a minimum 7 dBA reduction for at least one benefited receptor adjacent to the noise wall); and
3. Is cost effective (meets the cost effectiveness threshold of \$78,5000 per benefited receptor).<sup>1</sup>

If a modeled noise wall meets these three criteria, then the next step in the noise wall reasonableness determination is to solicit the viewpoints of benefited residents and property owners. Input received from benefited property owners and residents is expressed in a weighted vote. For benefited trail receptors, the owner of the land that the trail sits upon receives a total of 4 points if the trail is abutting the highway. The trail authority (i.e., entity that operates and maintains the trail) receives a total of 2 points. If the trail is not abutting the highway, the owner of the land that the trail sits upon receives a total of 2 points and the trail authority receives a total of 1 point.

If 50.0 percent or more of all possible voting points from eligible voters are received after the first request for votes, the majority of points (based upon the votes received) determine the outcome of the noise wall. If less than 50.0 percent of the possible voting points for a wall are received after the first request, a second ballot will be provided to the eligible voters who did not respond.

If 25.0 percent or more of all possible points for a wall are received after the second request for votes, then the outcome is determined by the majority of votes received. If less than 25.0 percent of total possible points for a noise wall are received after the second request for votes, then the wall will not be constructed. If there is a tie, where there are equal numbers of points for and against a noise wall, the noise wall will be constructed.

## Noise Wall Analysis Results

Noise walls were evaluated along CSAH 30 east of Brockton Lane (CSAH 101), along CSAH 30 east of the proposed 610 extension, along Lawndale Lane, and along the proposed 610 extension. A total of 17 modeled noise walls are feasible (provide at least a 5 dBA reduction at a minimum of one receptor behind the modeled noise wall), meet the noise reduction goal (provide a minimum 7 dBA reduction for at least one benefited receptor behind the modeled noise wall), and are cost effective (below the cost effectiveness threshold of \$78,500 per benefited receptor).

The City of Maple Grove is responsible for voting on 16 of the noise walls. This is because Maple Grove is the trail authority for existing and proposed trails and the property owner for the proposed 610 extension. The 16 noise walls for City of Maple Grove voting are listed below. Additional information regarding these modeled noise walls is provided in the following sections. The locations of the modeled noise walls are illustrated in the enclosed figures.

- Wall A1-1: south side of CSAH 30, Brockton Lane to Zircon Lane
- Wall A2: south side of CSAH 30, Zircon Lane to Winslow Chase
- Wall B1: south side of CSAH 30, Winslow Chase to Troy Lane

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<sup>1</sup> A receptor is considered “benefited” if it receives a minimum noise reduction of 5 dBA.

- Wall B2: south side of 610 extension, Troy Lane to CSAH 30
- Wall C: north side of CSAH 30, Brockton Lane to Troy Lane
- Wall D: north side of 610 extension, Troy Lane to CSAH 30
- Wall E2: south side of CSAH 30, Queensland Lane to Peony Lane
- Wall F: south side of CSAH 30, Peony Lane to Lawndale Lane
- Wall G1: north side of CSAH 30, 610 extension to Lawndale Lane
- Wall G2: west side of Lawndale Lane, 610 extension to 96<sup>th</sup> Place North
- Wall G3: west side of Lawndale Lane, 96<sup>th</sup> Place North to CSAH 30
- Wall I1: north side of 610 extension between CSAH 30 and Lawndale Lane
- Wall I2: south side of 610 extension between CSAH 30 and Lawndale Lane
- Wall I3: west side of Lawndale Lane between 101<sup>st</sup> Avenue and 610 extension
- Wall I4: east side of Lawndale Lane between 101<sup>st</sup> Avenue and 610 extension
- Wall I5: south side of 610 extension, Lawndale Lane to I-94

### **Noise Wall A1-1**

An existing trail is on the south side of CSAH 30 between Brockton Lane and Zircon Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptor TR1 through Receptor TR3.

Modeled traffic noise levels at the trail receptors between Brockton Lane and Zircon Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall A1-1 is in highway right of way adjacent to the trail on the south side of CSAH 30 between Brockton Lane and Zircon Lane. The modeled noise wall length is 980 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Two trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$138,440.<sup>2</sup> The cost-effectiveness of the

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<sup>2</sup> Estimated cost of noise wall construction is \$36/square foot for an acoustically absorbent concrete post/concrete panel noise wall type.

modeled noise wall is \$69,220 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall A1-1 are summarized below.

- 4 voting points for City of Maple Grove for two benefited trail receptors.
- 8 voting points Hennepin County for two benefited trail receptors.
- The total number of voting points for Noise Wall A1-1 is 12. Fifty (50.0) percent of voting points for Noise Wall A1-1 is 6.

## **Noise Wall A2**

An existing trail is on the south side of CSAH 30 between Zircon Lane and Winslow Chase. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptor TR4 and Receptor TR5.

Modeled traffic noise levels at the trail receptors between Zircon Lane and Winslow Chase are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. Modeled traffic noise levels at a residence on the west side of Winslow Chase also are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category B, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated.

Noise Wall A2 is in highway right of way adjacent to the trail on the south side of CSAH 30 between Zircon Lane and Winslow Chase. The modeled noise wall length is 305 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. One trail receptor receives a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$76,860. The cost-effectiveness of the modeled noise wall is \$76,860 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall A2 are summarized below.

- 2 voting points for City of Maple Grove for one benefited trail receptor.
- 4 voting points Hennepin County for one benefited trail receptor.

- The total number of voting points for Noise Wall A2 is 6. Fifty (50.0) percent of voting points for Noise Wall A2 is 3.

### **Noise Wall B1**

An existing trail is on the south side of CSAH 30 between Winslow Chase and Troy Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptor TR6 through Receptor TR9.

Modeled traffic noise levels at the trail receptors between Winslow Chase and Troy Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. Modeled traffic noise levels at a residence on the east side of Winslow Chase also are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category B, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated.

Noise Wall B1 is in highway right of way adjacent to the trail on the south side of CSAH 30 between Winslow Chase and Troy Lane. The modeled noise wall length is 620 feet. The modeled wall height is 6 feet. The modeled noise wall is acoustically feasible. Three trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$220,110. The cost-effectiveness of the modeled noise wall is \$73,370 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall B1 are summarized below.

- 6 voting points for City of Maple Grove for three benefited trail receptors.
- 12 voting points Hennepin County for three benefited trail receptors.
- The total number of voting points for Noise Wall B1 is 18. Fifty (50.0) percent of voting points for Noise Wall B1 is 9.

### **Noise Wall B2**

An existing trail is on the south side of CSAH 30 between Troy Lane and the proposed 610 extension/CSAH 30 intersection. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR11 and TR12 and Receptors TR51 and TR52.

Modeled traffic noise levels at the trail receptors between Troy Lane and the proposed 610 extension/Troy Lane intersection are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall B2 is in highway right of way adjacent to the trail on the south side of CSAH 30 between Troy Lane and the proposed 610 extension/CSAH 30 intersection. The modeled noise wall length is 1,130 feet. The modeled wall height is 6 feet. The modeled noise wall is acoustically feasible. Four trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$244,080. The cost-effectiveness of the modeled noise wall is \$61,020 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall B2 are summarized below.

- 8 voting points for City of Maple Grove for four benefited trail receptors.
- 16 voting points Hennepin County for four benefited trail receptors.
- The total number of voting points for Noise Wall B2 is 24. Fifty (50.0) percent of voting points for Noise Wall B2 is 12.

### **Noise Wall C**

An existing trail is on the north side of CSAH 30 between Brockton Lane and Troy Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptor TR23 through Receptor TR31.

Modeled traffic noise levels at the trail receptors between Brockton Lane and Troy Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall C is in highway right of way adjacent to the trail on the north side of CSAH 30 between Brockton Lane and Troy Lane. The modeled noise wall length is 1,960 feet. The modeled wall height is 6 feet. The modeled noise wall is acoustically feasible. Seven trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Two trail receptors receive at least a 7 dBA reduction or greater with the modeled noise



wall. The cost of the modeled noise wall is \$496,710. The cost-effectiveness of the modeled noise wall is \$70,959 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall C are summarized below.

- 14 voting points for City of Maple Grove for seven benefited trail receptors.
- 28 voting points Hennepin County for seven benefited trail receptors.
- The total number of voting points for Noise Wall C is 42. Fifty (50.0) percent of voting points for Noise Wall C is 21.

### **Noise Wall D**

An existing trail is on the north side of CSAH 30 between Troy Lane and the proposed 610 extension/CSAH 30 intersection. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR32 and TR33 and Receptors TR98 through TR100.

Modeled traffic noise levels at the trail receptors between Troy Lane and the proposed 610 extension/CSAH 30 intersection are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall D is in highway right of way adjacent to the trail on the north side of CSAH 30 between Troy Lane and the proposed 610 extension/CSAH 30 intersection. The modeled noise wall length is 565 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Two trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$142,380. The cost-effectiveness of the modeled noise wall is \$71,190 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall D are summarized below.

- 4 voting points for City of Maple Grove for two benefited trail receptors.
- 8 voting points Hennepin County for two benefited trail receptors.

- The total number of voting points for Noise Wall D is 12. Fifty (50.0) percent of voting points for Noise Wall D is 6.

## **Noise Wall E2**

An existing and proposed trail is on the south side of CSAH 30 between Queensland Lane and Peony Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR55 and TR56.

Modeled traffic noise levels at the trail receptors between Queensland Lane and Peony Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall E2 is in highway right of way adjacent to the trail on the south side of CSAH 30 between Queensland Lane and Peony Lane. The modeled noise wall length is 435 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Two trail receptors and three residential receptors receive a 5 dBA reduction or greater with the modeled noise wall. The three benefited residential receptors are behind the trail, abutting the right of way. The modeled noise wall meets the noise reduction design goal. Two trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$109,620. The cost-effectiveness of the modeled noise wall is \$21,924 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). Each of the three benefited residences receive 6 voting points as owners/residents.

The residences between Queensland Land and Peony Lane also are part of a townhome association with common land ownership (Northglen Carriage). Under the 2017 MnDOT Noise Requirements, the townhome association is considered a landowner for determining voting points. The townhome association is assigned 4 voting points for each benefited residential unit. The voting points for Noise Wall E2 are summarized below.

- 4 voting points for City of Maple Grove for two benefited trail receptors.
- 8 voting points for Hennepin County for two benefited trail receptors.
- 18 voting points for three benefited residences.
- 12 voting points for townhome association (common land ownership).
- Total number of voting points for Noise Wall E2 is 42. Fifty (50.0) percent of voting points for Noise Wall E2 is 21.

## Noise Wall F

An existing trail is on the south side of CSAH 30 between Peony Lane and Lawndale Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR17 through TR22.

Modeled traffic noise levels at the trail receptors between Peony Lane and Lawndale Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall F is in highway right of way adjacent to the trail on the south side of CSAH 30 between Peony Lane and Lawndale Lane. The modeled noise wall length is 1,020 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Five trail receptors and six residential receptors receive a 5 dBA reduction or greater with the modeled noise wall. The six benefited residential receptors are behind the trail, abutting the right of way. The modeled noise wall meets the noise reduction design goal. Four trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$362,490. The cost-effectiveness of the modeled noise wall is \$32,954 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). Each of the six benefited residences receive 6 voting points as owners/residents.

The residences east of Peony Lane also are part of a townhome association with common land ownership (Northglen Carriage). Under the 2017 MnDOT Noise Requirements, the townhome association is considered a landowner for determining voting points. The townhome association is assigned 4 voting points for each benefited residential unit. The voting points for Noise Wall F are summarized below.

- 10 voting points for City of Maple Grove for five benefited trail receptors.
- 20 voting points Hennepin County for five benefited trail receptors.
- 36 voting points for six benefited residences.
- 20 voting points for townhome association (common land ownership).
- The total number of voting points for Noise Wall F is 86. Fifty (50.0) percent of voting points for Noise Wall F is 43.

## Noise Wall G1

An existing trail is on the north side of CSAH 30 between the proposed 610 extension and Lawndale Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR39 through TR44 and Receptors TR57 through TR60.

Modeled traffic noise levels at the trail receptors between the proposed 610 extension and Lawndale Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the CSAH 30 trail.

Noise Wall G1 is in highway right of way adjacent to the trail on the north side of CSAH 30 between the proposed 610 extension and Lawndale Lane. The modeled noise wall length is 2,115 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Nine trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Six trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$622,620. The cost-effectiveness of the modeled noise wall is \$71,190 per benefited receptor, below the cost effectiveness threshold of \$69,180 per benefited receptor.

The City of Maple Grove is the trail authority for determining voting points for the proposed trail (2 voting points per benefited receptor). Hennepin County is the owner for determining voting points for the trail (4 voting points per benefited receptor). The voting points for Noise Wall G1 are summarized below.

- 18 voting points for City of Maple Grove for nine benefited trail receptors.
- 36 voting points Hennepin County for nine benefited trail receptors.
- The total number of voting points for Noise Wall G1 is 54. Fifty (50.0) percent of voting points for Noise Wall G1 is 27.

## Noise Wall G2

An existing trail is on the west side of Lawndale Lane between 96<sup>th</sup> Place North and CSAH 30. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR46 through TR50.

Modeled traffic noise levels at the trail receptors between the 610 extension and 96<sup>th</sup> Place North are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise

walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the Lawndale Lane trail.

Noise Wall G2 is in highway right of way adjacent to the trail on the west side of Lawndale Lane between 96<sup>th</sup> Place North and CSAH 30. The modeled noise wall length is 1,045 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Three trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$225,720. The cost-effectiveness of the modeled noise wall is \$75,240 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall G2 are summarized below.

- 18 voting points for City of Maple Grove for three benefited trail receptors.
- The total number of voting points for Noise Wall G2 is 18. Fifty (50.0) percent of voting points for Noise Wall G2 is 9.

### **Noise Wall G3**

An existing and proposed trail is on the west side of Lawndale Lane between the 610 extension and 96<sup>th</sup> Place North. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR45 and Receptors TR68 through TR72.

Modeled traffic noise levels at the trail receptors between the 610 extension and 96<sup>th</sup> Place North are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the Lawndale Lane trail.

Noise Wall G3 is in highway right of way adjacent to the trail on the west side of Lawndale Lane between the 610 extension and 96<sup>th</sup> Place North. The modeled noise wall length is 1,395 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Three trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$351,540. The cost-effectiveness of the modeled noise wall is \$70,308 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall G3 are summarized below.

- 30 voting points for City of Maple Grove for five benefited trail receptors.
- The total number of voting points for Noise Wall G3 is 30. Fifty (50.0) percent of voting points for Noise Wall G3 is 15.

### **Noise Wall I1**

A proposed trail is on the north side of the 610 extension between CSAH 30 and Lawndale Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR90 through TR97.

Modeled traffic noise levels at the trail receptors between CSAH 30 and Lawndale Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the 610 extension trail.

Noise Wall I1 is in highway right of way adjacent to the trail on the north side of the 610 extension between CSAH 30 and Lawndale Lane. The modeled noise wall length is 1,855 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Six trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Six trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$467,460. The cost-effectiveness of the modeled noise wall is \$77,910 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall I1 are summarized below.

- 36 voting points for City of Maple Grove for six benefited trail receptors.
- The total number of voting points for Noise Wall I1 is 36. Fifty (50.0) percent of voting points for Noise Wall I1 is 18.

### **Noise Wall I2**

A proposed trail is on the south side of the 610 extension between CSAH 30 and Lawndale Lane. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR60 through TR67.

Modeled traffic noise levels at the trail receptors between CSAH 30 and Lawndale Lane are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes

trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the 610 extension trail.

Noise Wall I2 is in highway right of way adjacent to the trail on the south side of the 610 extension between CSAH 30 and Lawndale Lane. The modeled noise wall length is 1,875 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Seven trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Five trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$472,500. The cost-effectiveness of the modeled noise wall is \$67,500 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall I2 are summarized below.

- 42 voting points for City of Maple Grove for seven benefited trail receptors.
- The total number of voting points for Noise Wall I2 is 42. Fifty (50.0) percent of voting points for Noise Wall I2 is 21.

### **Noise Wall I3**

A proposed trail is on the west side of Lawndale Lane between 101<sup>st</sup> Avenue and the 610 extension. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR86 through TR89 and TR103.

Modeled traffic noise levels at the trail receptors between 101<sup>st</sup> Avenue and the 610 extension are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the Lawndale Lane trail.

Noise Wall I3 is in highway right of way adjacent to the trail on the west side of Lawndale Lane between 101<sup>st</sup> Avenue and the 610 extension. The modeled noise wall length is 1,170 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Four trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Two trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$294,840. The cost-effectiveness of the modeled noise wall is \$73,710 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall I3 are summarized below.

- 24 voting points for City of Maple Grove for four benefited trail receptors.
- The total number of voting points for Noise Wall I3 is 24. Fifty (50.0) percent of voting points for Noise Wall I3 is 12.

#### **Noise Wall I4**

A proposed trail is on the east side of Lawndale Lane between 101<sup>st</sup> Avenue and the 610 extension. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR82 through TR85 and TR104.

Modeled traffic noise levels at the trail receptors between 101<sup>st</sup> Avenue and the 610 extension are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the Lawndale Lane trail.

Noise Wall I4 is in highway right of way adjacent to the trail on the east side of Lawndale Lane between 101<sup>st</sup> Avenue and the 610 extension. The modeled noise wall length is 1,110 feet. The modeled wall height is 7 feet. The modeled noise wall is acoustically feasible. Four trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. Two trail receptors receive at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$279,720. The cost-effectiveness of the modeled noise wall is \$69,930 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall I4 are summarized below.

- 24 voting points for City of Maple Grove for four benefited trail receptors.
- The total number of voting points for Noise Wall I4 is 24. Fifty (50.0) percent of voting points for Noise Wall I4 is 12.

#### **Noise Wall I5**

A proposed trail is on the south side of the 610 extension between Lawndale Lane and I-94. Modeled receptors were placed along the trail following MnDOT guidance for assigning noise receptors for trails (i.e., one representative receptor per 250 feet of trail). This segment of trail is represented by Receptors TR73 through TR81 and TR105.



Modeled traffic noise levels at the trail receptors between Lawndale Lane and I-94 are projected to exceed 67 dBA (Leq) under future conditions with the 610 Extension Project. The 67 dBA (Leq) level is the noise abatement criterion for Federal Activity Category C, which includes trails. If modeled traffic noise levels approach or exceed the noise abatement criterion, then noise walls must be evaluated. The only reason to evaluate a noise wall at this location is because of the impacted receptors on the 610 extension trail.

Noise Wall I5 is in highway right of way adjacent to the trail on the south side of the 610 extension between Lawndale Lane and I-94. The modeled noise wall length is 2,280 feet. The modeled wall height is 6 feet. The modeled noise wall is acoustically feasible. Nine trail receptors receive a 5 dBA reduction or greater with the modeled noise wall. The modeled noise wall meets the noise reduction design goal. One trail receptor receives at least a 7 dBA reduction or greater with the modeled noise wall. The cost of the modeled noise wall is \$492,480. The cost-effectiveness of the modeled noise wall is \$54,720 per benefited receptor, below the cost effectiveness threshold of \$78,500 per benefited receptor.

The City of Maple Grove is the trail authority and property owner for determining voting points for the proposed trail (6 voting points per benefited receptor). The voting points for Noise Wall I5 are summarized below.

- 54 voting points for City of Maple Grove for nine benefited trail receptors.
- The total number of voting points for Noise Wall I5 is 54. Fifty (50.0) percent of voting points for Noise Wall I5 is 27.