

ROSEVILLE
REQUEST FOR COUNCIL ACTION

Date: 02/08/10
Item No.: 13.a

Department Approval



City Manager Approval



Item Description: Discussion of Noise Wall Along Highway 36 as a part of the Rice Street Interchange Project

BACKGROUND

At the January 25, 2010 meeting, the City Council received a petition from some of the residents in the neighborhood directly north of Highway 36 and west of Rice Street requesting that they reconsider their support for the construction of a noise wall on the north side of Highway 36 between Rice Street and Western Avenue. Specifically, they requested that the wall be eliminated between Marion Street and Western Avenue.

The decision to support the construction of this noise wall was made on June 29, 2009 after the City Council held a Public Hearing receiving comments from the public. Attached are the minutes and approved resolution from that meeting.

The proposal to build a noise wall is a part of Ramsey County's plans to reconstruct the interchange of Highway 36 and Rice Street. As part of the process and in accordance with state and federal environmental rules, the County evaluated the impacts of highway noise on the properties adjacent to this corridor. Attached is the Noise Analysis that was completed for this project.

Sound has qualitative aspects that can be described with adjectives, and quantitative aspects that can be described with measurements. Sound can be perceived as pleasant or annoying, and as loudness, in terms of decibels. Changes in loudness are described on a logarithmic scale because the human ear can hear such a wide variety of sound levels. The human ear can usually tell the difference when sound changes by 3 dBA, and a 5 dBA change is clearly noticeable. Because of the logarithmic scale, an increase of 10 dBA sounds twice as loud. More information on Acoustical Properties, Measurement, Analysis and Regulation of Noise is available in the MPCA publication: "A Guide to Noise Control in Minnesota" at <http://www.pca.state.mn.us/publications/p-gen6-01.pdf>

With an improved interchange and background traffic growth, there will be additional traffic travelling on TH 36 and using the highway ramps. The noise analysis indicates that highway noise in the northwest quadrant of the interchange currently exceeds the state standards by as much as 5 dB. Since the noise levels exceed state and federal noise standards, a mitigation analysis was completed to determine if measures, such as a noise wall, are reasonable and effective in attenuating the noise at those locations. The analysis concluded that a noise wall would reduce the noise for many of the properties between Western and Rice Street by 5 dB or greater. A cost effectiveness analysis was been performed as part of the noise analysis for this project. This noise reduction meets MnDOT cost criteria and was recommended for design and construction as a part of this project.

POLICY OBJECTIVE

32 The City of Roseville participates in the planning of regional transportation projects to ensure local
33 interests are addressed and that negative environmental impacts to the community are mitigated to the
34 extent practicable.

35 Staff sent out a letter to the same mailing list that were notified for the June meeting to inform them of
36 this item being brought the city council at the February 8th meeting for discussion. We have received
37 two emails supporting the Council's June decision, they are attached.

38 Staff has met with the managers of the Calibre Ridge Apartments, they have not stated whether they are
39 supportive of a change to the noise wall plan at this time.

40 Attached is a map showing the location of the noise wall, the property owners that have provided us
41 feedback, and the existing contours of the area. Staff is developing cross sections showing the elevation
42 of the noise wall in comparison to the homes, existing grades and trees along this corridor. These will
43 be presented to the City Council at the meeting on Monday night.

44 **FINANCIAL IMPACTS**

45 If the noise wall is included with this project, the cost to construct it will be paid for by Ramsey County
46 and MnDOT. The plan set is at 95% development, with construction anticipated to start in the Spring.
47 It is our understanding that the plans for this project can be changed to shorten or eliminate the noise
48 wall. Representatives from MnDOT will be attending the meeting to answer questions about a how a
49 change in the Council recommendation will impact funding and timing for this project.

50 **STAFF RECOMMENDATION**

51 Staff recommends that the Council discuss the petition received by residents and provide staff direction
52 regarding the construction of a noise wall.

53 **REQUESTED COUNCIL ACTION**

54 Discuss petition received by residents and provide staff direction regarding the construction of a noise
55 wall.

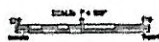
Prepared by: Debra Bloom, Assistant Public Works Director

Attachments: A. Petition received 1/25/10
B. City Council Meeting Minutes- 6/29/09
C. Resolution No. 10722
D. Carver Correspondence (email)
E. Parlow Correspondence (email)
F. Noise Analysis Report- April 2009
G: Location map
H. McDonald Correspondence

NOISE WALL TO END BEFORE MARION STREET PETITION						
ADDRESS	NAME	PHONE NUMBER	NO	???	YES	SIGNATURE
2254 Western	Grayden	651 484-2156			X	<i>Juanita L. Grayden</i>
357 Capital View	Grayden	651 484-2156			X	<i>Juanita L. Grayden</i>
345 Capital View	Stubbe	651 484-3906	X			<i>Jean C. Wong</i>
341 Capital View	Wong	651 484-7008			X	<i>Jean C. Wong</i>
333 Capital View	Madden / Hanlon	651 484-4298			X	<i>Jean C. Madden</i>
325 Capital View	Hockemeyer	651 484-4219			X	<i>Jean C. Hockemeyer</i>
319 Capital View	French	651 484-0283			X	<i>Juan Dwyer French</i> <i>John R. French</i>
311 Capital View	Davis / Cavegn	651 482-1971			X	<i>Bonnie B. Davis</i> <i>Bonnie Davis</i>
299 Capital View	Ischer	??		X		
289 Capital View	Ebert	651 484-7645			X	<i>Robert Ebert</i> <i>Robert Ebert</i>
283 Capital View	Dehaven	651 483-3412			X	<i>Kathie DeHaven</i> <i>Tom DeHaven</i>
271 Capital View	Regal <i>Gerald + Karen</i>	651 484-3667	X		X	<i>Vicki Regal</i>
263 Cap. Vw Cir.	Dzu	651-633-5787			X	<i>THOMAS TRI DZU</i>

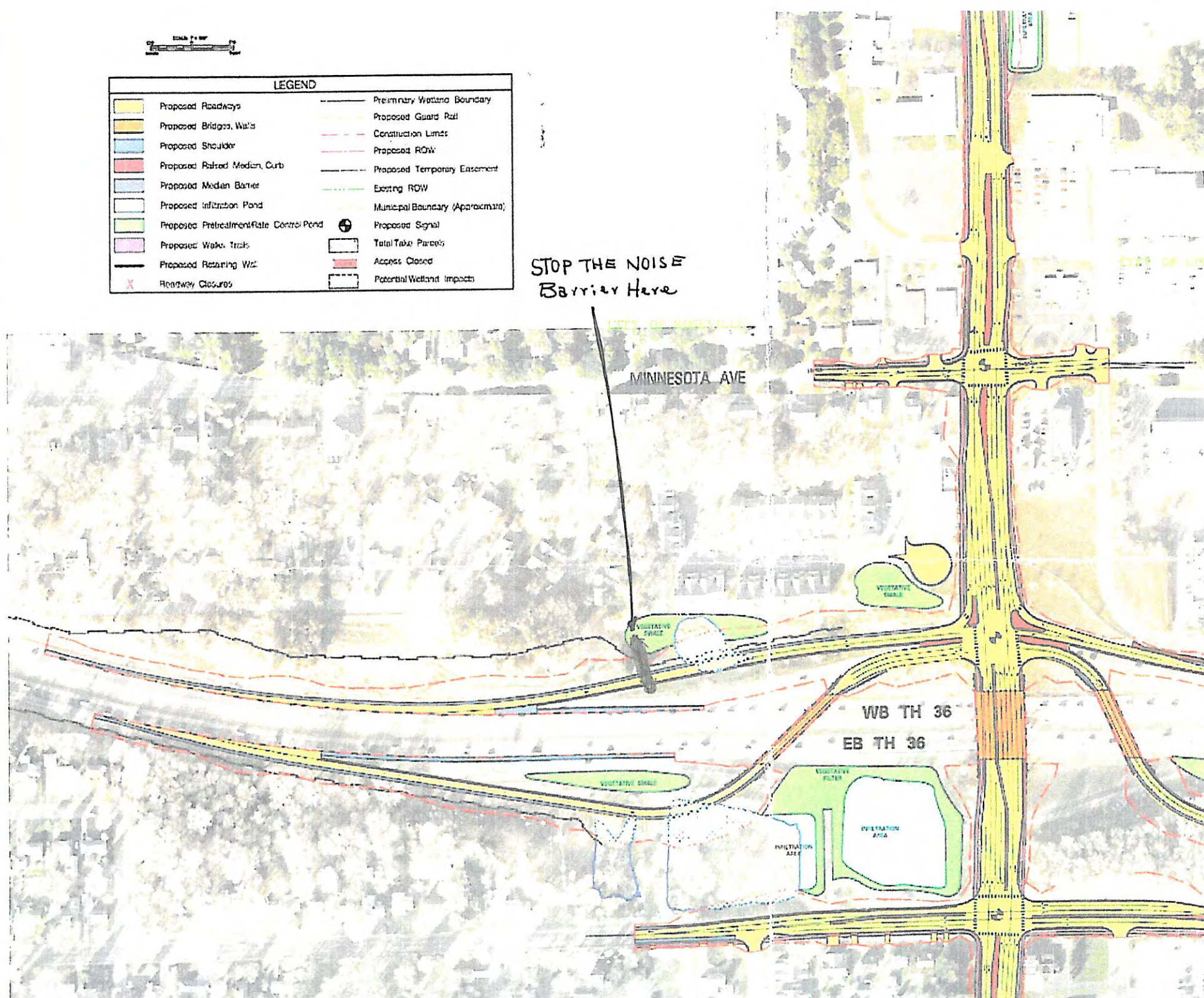
NOISE WALL TO END BEFORE MARION STREET PETITION

[illegible]



LEGEND	
Proposed Roadways	Preliminary Wetland Boundary
Proposed Bridges, Walls	Proposed Guard Rail
Proposed Shoulder	Construction Limits
Proposed Raised Median, Curb	Proposed ROW
Proposed Median Barrier	Proposed Temporary Easement
Proposed Infiltration Pond	Existing ROW
Proposed Pretreatment/Filter Control Pond	Municipal Boundary (Approximate)
Proposed Walks, Trails	Proposed Signal
Proposed Retaining Wall	Total Take Parcels
Roadway Closures	Access Closed
	Potential Wetland Impacts

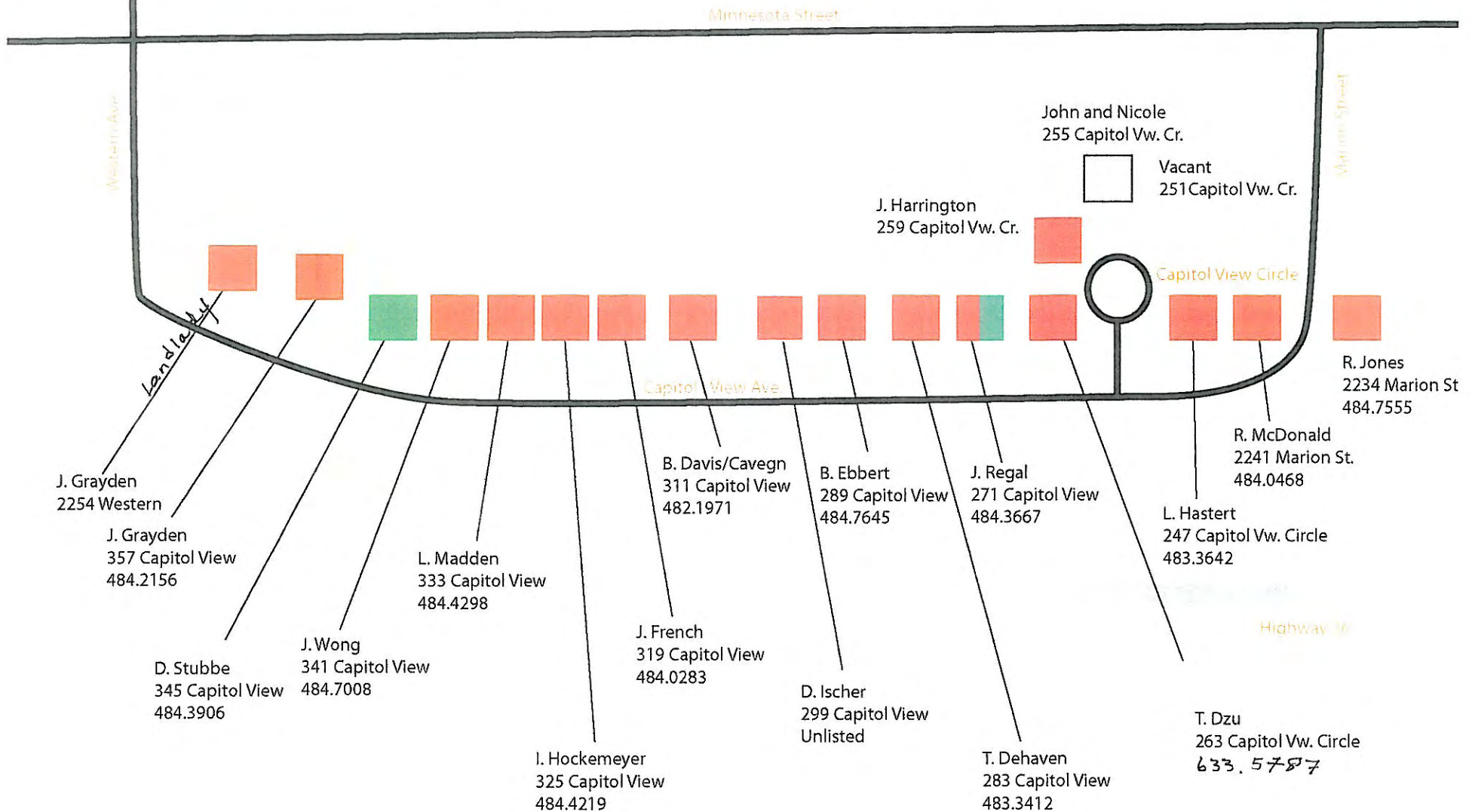
STOP THE NOISE
Barrier Here



Point of View of Capitol View Residents — Noise Wall

*"Before I built a wall, I'd ask to know
What I was walling in or walling out,
And to whom I was like to give offense."*

Robert Frost



11. Public Hearings

a. **Public Hearing for Proposed Construction of a Noise Wall along Highway 36 as a part of the Rice Street Interchange Project**

Public Works Director Duane Schwartz reviewed summarized the evaluation and design process to-date, based on state and federal environmental rules, for Ramsey County's reconstruction of the interchange of Highway 36 and Rice Street, from preliminary to final design. Mr. Schwartz noted that a noise analysis has indicated that highway noise in the northwest quadrant of the interchange would exceed state standards, creating the need to verify that a majority of the property owners adjacent to the noise wall are supportive of its construction.

Mr. Schwartz introduced agency representatives and presenters of the proposed noise wall, including Ramsey County Project Manager Jim Tolaas; Marc Goess, with the Minnesota Department of Transportation (MnDOT); and Engineering Consultants Mark Benson and Eric Tomlinson with the firm S.E.H.

Presenters provided schematics of the proposed design of Highway 36 and the intersection at Highway 36 and Rice Street, eliminating one signalized intersection on Rice, evening alignment and proposing a noise wall on the north side of Highway 36. The presentation included rationale and criteria in the noise analysis; state and federal standards based on decibel (dBA) levels and differentiations in those standards; and daytime and night-time dBA levels, with abatement required when they exceeded those standards, whenever technically feasible and reasonable. Comparison levels for typical dBA perceptions were provided; and impact assessments based on computer modeling before and after proposed construction activities; and mitigation assessment indicating barrier effectiveness, location, and municipal support for such mitigation.

Presenters provided overall observations from both sides of Highway 36 and noise levels above state standards today, and predicted in the future; inability to install a noise wall on the south side based on MnDOT cost-effectiveness criteria; proposed changes in ramp locations and ground lines that would further serve to reduce some noise levels; and recommendations, based on that analysis, of a 20 foot noise wall along the north side of Highway 36, ultimately affecting 41 residents along that side, with terrain impacts providing additional shielding affects. The proposed location of the wall would be from Western Avenue to in front of Calibre Ridge townhomes, with flexibility provided for the location of the wall based on topography and noise reduction modeling for maximum dBA reductions. Sample construction types and views were presented.

Presenters noted that local communities impacted were given an opportunity to approve or deny proposed noise wall construction; and advised of their availability to respond to questions and/or concerns of the public and City Council.

Discussion among Councilmembers and presenters included the need to remove some vegetation and mature trees for construction of the noise wall, with further consideration for retaining as many as possible; costs for noise wall construction built into the project, with no cost to the city; acoustical effectiveness versus the aesthetics of a 20 foot wall; distance variations of first row properties depending on topography and most effective location of the wall; and benefits to those properties in noise level reductions.

Further discussion included if property owners needed to be individually surveyed as a next step in the process if there was not a clear indication from tonight's Public Hearing; and measurement of the 20 feet in relation to the level of the highway depending on topography.

Mayor Klausing opened the Public Hearing at 8:04 p.m. to receive public comment on the proposed construction of a noise wall along Highway 36 as a part of the Rice Street Interchange Project.

Public Comment

For the record, City Manager Malinen noted receipt of mailed, telephone, and/or e-mailed comment for tonight's meeting, with those in favor being 5 in number and those against being 2 in number.

Mike Bowden, south side of Highway 36, 311 County Road B

Mr. Bowden asked if there would be an increase in noise on the south side of the highway if the noise wall was built on the north side.

Mr. Tomlinson responded that MnDOT had performed field studies based on that concern, and responded that there was no noticeable increase to the opposite side with construction of the noise wall; and that the frequency or type of noise could change, but wouldn't increase perceptively.

Jeff Pedro, 2252 Marion Street (behind Calibre Ridge)

Mr. Pedro expressed concern in losing trees or vegetation between the wall and their location; however, opined that the trees would continue to grow to block out the wall, and overall was supportive of the noise wall, and proposed location.

Dean Stubbe, 345 Capital View

Mr. Stubbe expressed his wholehearted support of the wall; and opined that it would help with noise and air pollution as well.

Ray McDonald, 2241 Marion Street

Mr. McDonald advised that the normal humdrum tire noise were not a problem, but expressed annoyance with big trucks and massive tire noise, including their

1 jake breaking as they slowed for the Rice Street interchange. Mr. McDonald
2 opined that when the road was first resurfaced, there was little tire noise;
3 however, as the roadway became worn, the tire noise had increased, particularly
4 during the nights, when it seemed excessive. Mr. McDonald was generally
5 supportive of the wall; but questioned if graffiti would become a problem, even
6 though the wall would be a benefit to the neighborhood.

7
8 Mr. Gess advised that MnDOT would be responsible for maintenance of the wall,
9 and applied a graffiti prevention coating on the wall that made graffiti removal, if
10 necessary, and easier process.

11
12 **Bee Hanlon, 333 Capital View** Ms. Hanlon spoke in support of the wall; but
13 questioned how far south of the freeway fence, on the western edge, the wall
14 would be located, based on the slope of the land in that area.

15
16 Mr. Benson responded that distance between the wall and fence would depend on
17 the specific location; and clarified that in some areas the fence would be removed,
18 depending on rights-of-way locations, topography.

19
20 Mr. Gess advised that MnDOT prefers locating the noise wall as close to the
21 right-of-way line as possible, while allowing for a ten foot buffer, with that
22 property available to the property owner for additional use; with maintenance of
23 that property usually up to the property owner, given the low priority given
24 beyond annual maintenance by MnDOT due to budget and staff constraints.

25
26 **Karen Regal, 271 Capital View**

27 Ms. Regal was basically supportive of the wall for noise reduction, with some
28 ambivalence based on aesthetics and no longer having a view; and sought
29 clarification as to whether the berm hill would be leveled, noting that sound
30 currently came through in several areas surrounding the berm.

31
32 Mr. Gess advised that the berm would most likely be leveled some to allow the
33 contractor to establish a working platform.

34
35 **Francine Bloecker, 2244 Marion Street**

36 Ms. Bloecker spoke in support of the wall, and thanked MnDOT and other
37 agencies for its installation; opining that the noise continued to get worse all the
38 time, and with trees between her and Calibre Ridge behind her, she still couldn't
39 have her windows open due to the noise.

40
41 **Yvonne Greilin, 357 Capital View**

42 Ms. Greilin spoke in opposition to the wall, asking that she not be fenced in. Ms.
43 Greilin opined that she had to keep her windows closed all the time; but she didn't
44 want to look at a fence; and no longer be able to have a "Capital View" any
45 longer.

For the benefit of the entire City Council, Mayor Klausing polled those members of the public present in the audience to determine those supporting the wall, those in opposition, and those ambivalent.

Mr. Pedro

Mr. Pedro noted the benefits of the wall on the environmental, based on previous comments about having to consistently run the air rather than opening windows.

Mayor Klausing closed the Public Hearing at 8:24 p.m.

12. Business Items (Action Items)

a. Approve Construction of Noise Wall along Highway 36 as a part of the Rice Street Interchange Project

Before making a decision, Councilmember Ihlan requested a more detailed survey, specifically of those closest to the wall, to determine the balance of public opinion; while recognizing that the majority of comments heard tonight were in favor of the wall's construction.

Mayor Klausing reviewed written comments received to-date on this issue, as previously reported by City Manager Malinen.

Councilmember Ihlan questioned if some of the written comments supporting the wall were premature based on their perception of the height and landscaping that were not specifically addressed in the written notice from staff.

Mayor Klausing questioned any significant changes in comparable feedback to-date with an approximate 70/30% majority split in support of the wall.

Councilmember Ihlan opined that those directly affected, and closest to the wall, could have full information, and then speak for or against.

Councilmember Johnson clarified with staff the notice provided for tonight's public hearing; with Mr. Schwartz advising that staff had mailed 120 letters to area residents most impacted by the wall, with the proposed 20 foot height and other project information provided in that notice, but not providing specific information on individual properties.

Councilmember Johnson spoke in support of municipal approval of the noise wall, based on tonight's comments and previous calls and e-mails he'd received.

Councilmember Roe clarified the area provided mailed notice, with Mr. Schwartz advising that notices within a 500 foot area of the right-of-way had been notices. Councilmember Roe spoke in support of municipal approval of the noise wall,

1 based on that notice and people's understanding of the appearance of a noise wall.
2 Councilmember Roe opined that as long as people were notified, if they were
3 opposed, they would communicate their opposition to the City Council before or
4 during the meeting; and advised that he had heard little opposition to-date.
5 Councilmember Roe noted that there were considerations to be given to the
6 payoff in noise reduction versus visibility. Councilmember Roe noted that he
7 would not have supported approval had he heard sufficient opposition.
8

9 Klausung moved, Johnson seconded, adoption of Resolution No. 10722 entitled,
10 "Resolution in Support of a Noise Wall to be Constructed on the North Side of
11 Highway 36;" as a part of the Rice Street interchange project.
12

13 Mayor Klausung spoke in support of the motion; opining that it was up to a
14 majority of impacted residents, noting that all would not be happy; but echoing
15 Councilmember Roe's comments related to majority support. Mayor Klausung
16 offered his respect to those in opposition; however, he remained confident that,
17 even if there were a few more residents heard from by delaying this action, the
18 majority would support moving forward.
19

20 Councilmember Ihlan reiterated her preference to hear from more citizens on this
21 proposal.
22

23 Councilmember Johnson opined that the City would seldom receive 100%
24 participation; however, he further opined that the City had performed their due
25 diligence in sending out the notices, and that the comments received were
26 representative of those impacted by the project, and expressed his confidence that
27 those remaining residents would be present if they were opposed to the project.
28

29 **Roll Call**

30 **Ayes:** Johnson; Ihlan; Roe; and Klausung.

31 **Nays:** None.

**EXTRACT OF MINUTES OF MEETING
OF CITY COUNCIL
OF CITY OF ROSEVILLE
RAMSEY COUNTY, MINNESOTA**

Pursuant to due call and notice thereof, a regular meeting of the City Council of the City of Roseville, Minnesota, was held in the City Hall in said City on Monday, June 29, 2009, at 6:00 o'clock p.m.

The following members were present: Johnson; Ihlan; Roe; and Klausing and the following were absent: Pust

Councilmember Klausing introduced the following resolution and moved its adoption:

RESOLUTION NO. 10722

**RESOLUTION IN SUPPORT OF A NOISE WALL TO BE CONSTRUCTED ON THE NORTH SIDE OF
HIGHWAY 36**

WHEREAS, pursuant to requirements established by Federal law, U.S. Department of Transportation regulations, Minnesota Pollution Control Agency, and MnDot noise analysis guidelines: and

WHEREAS, a noise analyses related to the construction of a new interchange at Rice St. and Highway 36 identifies a benefit to properties on the north side of Highway 36 from the construction of a noise wall: and

WHEREAS, the City Council has held a hearing to receive comment from benefitting properties

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF ROSEVILLE, MINNESOTA, that the City Council hereby supports the construction of a noise wall on the north side of Highway 36 as a part of the construction of a new interchange at the intersection with Rice Street as proposed

The motion for the adoption of the foregoing resolution was duly seconded by Councilmember Johnson and upon vote being taken thereon, the following voted in favor thereof: Johnson; Ihlan; Roe; and Klausing and the following voted against the same: none

Whereupon said resolution was declared duly passed and adopted.

STATE OF MINNESOTA)
) SS
COUNTY OF RAMSEY)

I, the undersigned, being the duly qualified City Manager of the City of Roseville, Minnesota, do hereby certify that I have carefully compared the attached and foregoing extract of minutes of a regular meeting of the City Council of said City held on the 29th day of June, 2009, with the original thereof on file in my office, and the same is a full, true and complete transcript.

Adopted by the Council this 29th day of June, 2009.

(SEAL)



William J. Malinen, City Manager

Deb Bloom

From: Emily Carver
Sent: Tuesday, February 02, 2010 11:56 AM
To: Deb Bloom
Subject: Hwy.36 noise wall

Dear Ms. Bloom,

This is in regard to the letter we received from the city re: the noise barrier along Hwy 36. We are unable to attend the Feb. 8th meeting. We are both in favor of the barrier. Please do not eliminate it from the construction plans. Any solution to the noise from Highway 36 will be appreciated. Thank you for allowing us to voice our opinion.

Emily and Daniel Carver
404 Minnesota Ave.
Roseville, MN. 55113

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Deb Bloom

From: Gretchen Carlson
Sent: Monday, February 01, 2010 7:15 AM
To: Duane Schwartz; Deb Bloom
Subject: FW: Online Form Submittal: Contact Public Works

-----Original Message-----

From: support@civicplus.com [mailto:support@civicplus.com]
Sent: Sunday, January 31, 2010 9:36 AM
To: Gretchen Carlson
Subject: Online Form Submittal: Contact Public Works

The following form was submitted via your website: Contact Public Works

Name:: Simmie Parlow

Address:: 326 Minnesota Ave

City:: Roseville

State: : MN

Zip:: 55113

How would you like to be contacted? Remember to fill out the corresponding information below.: No Need to Contact Me

Home Phone Number::

Daytime Phone Number::

Email Address::

Please Share Your Comment, Question or Concern: Hi,

I cannot attend the Feb 8 meeting but I just wanted to say that I have been waiting for a noise wall on Highway 36 for years. Please do not eliminate this plan. I am adamantly in favor of a noise wall.

Thank you,
Simmie Parlow

Additional Information:

Form submitted on: 1/31/2010 9:35:57 AM

Submitted from IP Address:

Form Address: <http://www.cityofroseville.com/forms.aspx?FID=65>

Noise Analysis

TH 36 and Rice Street Interchange

Ramsey County, Minnesota

SEH No. RAMSP 105803

April 2009

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Attached Tables

Table 4 – Peak Daytime Noise Levels (7-8 AM)	
Table 5 – Peak Nighttime Noise Levels (4:30-5:30 PM)	
Table 6 – Noise Barrier Cost Effectiveness	

List of Appendices

Appendix A	MINNOISE Model Data
Appendix B	Figure 1 Receptor Locations

Noise Analysis

TH 36 and Rice Street Interchange

Prepared for Ramsey County, Minnesota

1.0 Project Scope and Description

SEH has conducted a detailed noise analysis and prepared a noise mitigation plan to address existing and future traffic levels associated with the TH36 and Rice St. modification project in Ramsey County, MN.

2.0 Noise Descriptions

Noise is defined as any unwanted sound. Sound travels in a wave motion and produces a sound pressure level. This sound pressure level is commonly measured in decibels. Decibels (dBA) represent the logarithmic increase in sound energy relative to a reference energy level. A sound increase of three dBA is barely perceptible to the human ear, a five dBA increase is clearly noticeable, and a ten dBA increase is heard as twice as loud. For example, if the sound energy is doubled (e.g., the amount of traffic doubles), there is a three dBA increase in noise, which is just barely noticeable to most people. On the other hand, if traffic increases to where there is ten times the sound energy level over a reference level, then there is a ten dBA increase and it is heard as twice as loud.

For highway traffic noise, an adjustment, or weighting, of the high- and low-pitched sounds, is made to approximate the way that an average person hears sounds. The adjusted sound levels are stated in units of "A-weighted decibels" (dBA). In Minnesota, traffic noise impacts are evaluated by measuring and/or modeling the traffic noise levels that are exceeded ten percent and 50 percent of the time during the hour of the day and/or night that has the heaviest traffic. These numbers are identified as the L_{10} and L_{50} levels. The L_{10} value is compared to FHWA noise abatement criteria.

The following chart provides a rough comparison of the noise levels of some common noise sources.

<u>Sound Pressure Level (dBA)</u>	<u>Noise Source</u>
140	----- Jet Engine (at 25 meters)
130	----- Jet Aircraft (at 100 meters)
120	----- Rock and Roll Concert
110	----- Pneumatic Chipper
100	----- Jointer/Planer
90	----- Chainsaw
80	----- Heavy Truck Traffic
70	----- Business Office
60	----- Conversational Speech
50	----- Library
40	----- Bedroom
30	----- Secluded Woods
20	----- Whisper

Source: "A Guide to Noise Control in Minnesota," Minnesota Pollution Control Agency, <http://www.pca.state.mn.us/programs/pubs/noise.pdf> and "Highway Traffic Noise," FHWA, <http://www.fhwa.dot.gov/environment/htnoise.htm>

2.1 State of Minnesota Noise Regulations

In accordance with FHWA requirements, Mn/DOT has adopted a statewide noise policy that clarifies the FHWA terminologies of noise impacts. "Mn/DOT Noise Policy for Type I and Type II Federal-aid Projects as per 23 CFR 772" includes the following descriptions:

Noise Level Approaching the NAC; Mn/DOT defines a level as "approaching" the criterion level when it is 1 dBA, or less, below the criterion level. For example, 69 dBA is considered "approaching" the FHWA NAC category B level of 70 dBA.

Substantial Increase in Noise; Mn/DOT defines a substantial increase in noise as those future predicted noise levels that exceed the FHWA NAC category B level of 70 by 5dBA or greater, or 75dBA.

Substantial Noise Reduction; Mn/DOT identifies feasibility requirements for the use of abatement procedures such as noise walls and their associated costs. These requirements require that every reasonable effort be made to obtain a substantial noise reduction. Mn/DOT defines a substantial noise reduction as 5dBA or more from a noise impact.

State noise standards are for a one-hour period and apply to outdoor areas. The standards are in terms of the L10 and L50 noise descriptors. The L10 is the sound level exceeded ten percent of the time, or six minutes out of an hour. The L50 is the sound level exceeded 50 percent of the time, or 30 minutes out of an hour.

Table 1 provides the Minnesota State Noise Standards for three Noise Area Classifications (NAC), and for daytime, nighttime, L10, and L50. The standards for NAC-1 apply to residential areas and other uses intended for overnight sleeping (hotels, motels, mobile homes, etc.). The NAC-1 standards

also apply to schools, churches, medical services, and park areas. The nighttime standards differ from the daytime standards only in areas intended for overnight sleeping. The NAC-1 daytime standards apply during nighttime hours at other NAC-1 land-use areas not intended for overnight sleeping. The NAC-2 standards are applicable to certain NAC-1 land uses if the following criteria are met:

- The building noise attenuation is at least 30 decibels (dBA);
- The building has year-round, indoor climate control;
- The building has no facilities for outdoor activities.

Table 1					
Minnesota State Noise Standards					
Noise Area Classification	General Land Use Type	Sound Level (dBA)			
		Day (0700-2200)		Night (2200-0700)	
		L10	L50	L10	L50
1	Residential	65	60	55	50
2	Commercial	70	65	70	65
3	Industrial	80	75	80	75

2.2 Federal Noise Abatement Criteria

In the Federal Noise Abatement criteria, a noise impact is defined as occurring when the predicted traffic noise levels:

- Approach or exceed the noise abatement criteria (see Table 2);
- Substantially exceed the existing noise levels.¹

The Federal Noise Abatement Criteria (23 CFR, Procedures for Abatement of Highway Traffic Noise and Construction Noise) are in terms of the Leq or L10 descriptor. In Minnesota, the L10 descriptor is used to identify impacts and has been used to identify impacts in this analysis. The criteria for activity category E (Table 2) are in terms of interior noise levels and are applied where there are no exterior activities to be affected by traffic noise. All other criteria are in terms of exterior noise levels.

The State of Minnesota has defined “approach or exceed” as being within one dBA or less of the activity category of the NAC, and “substantially exceed” as an increase of five dBA or more over existing noise levels.

¹ FHPM 7-7-3 Procedures for Abatement of Highway Traffic Noise and Construction Noise
[<http://www.fhwa.dot.gov/legisregs/directives/fapg/cfr0772.htm>]

Table 2
FHWA Noise Abatement Criteria
(Hourly A-Weighted Sound Level in Decibels (dBA))

Activity Category	L ₁₀ (h)	Description of Activity Category
A	60 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	70 dBA (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	75 dBA (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	No Limit	Undeveloped Lands
E	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

3.0 Evaluation and Process

This environmental noise analysis was performed according to Federal Highway Administration (FHWA), Minnesota Department of Transportation (Mn/DOT), and Minnesota Pollution Control Agency (MPCA) guidelines with regards to noise in and around proposed neighborhoods affected by the proposed road improvements.

3.1 Noise Model Testing Results

A detailed noise analysis has been conducted, and a proposed noise mitigation plan prepared. Many residences are located adjacent to the project area, and receptor locations are chosen that are representative of the various groupings of residences.

3.1.1 Methodology

Existing (2009) and future (2033) noise levels were modeled using the Federal Highway Administration (FHWA) noise prediction model STAMINA 2.0, as modified for use by Mn/DOT (MINNOISE). Noise projections were based on adjusted 2005 traffic counts, 2033 forecasted peak-hour traffic volumes, time of day, vehicle speeds, mix of vehicles, roadway grades, and the distance from the roadway center-of-lanes to the receptor (horizontal and vertical).

3.1.2 Noise Analysis Results

The MINNOISE/STAMINA 2.0 noise model applies five scenarios for comparison of the noise levels. The scenarios are: 1) Existing conditions (2009); 2) No Build Alternative (2033); 3) Build Alternative (2033) with no new noise barriers along the corridor; 4) Build Alternative (2033) with new 10 foot high noise barriers; and 5) Build Alternative (2033) with new 20 foot high noise barriers.

The noise analysis for the daytime L10 noise levels is referred to in this discussion. For purposes of addressing the Minnesota nighttime and L50 standards, analysis results are also included in **Tables 4 and 5** for the daytime L50, nighttime L10, and nighttime L50 noise levels.

Noise modeling was conducted at 44 receptor sites. Of these 44 receptors, three are considered to be within a commercial/industrial area. Therefore, 41 receptors of the 44 represent several residences each, with similar noise characteristics at the residences. See **Tables 4 and 5** for the results of the

noise analysis, and comparison to the Minnesota State Noise Standards and the Federal Noise Abatement Criteria. Receptor locations are shown on **Figure 1** in **Appendix B**.

All receptors were entered into the MINNOISE model using Alpha factors equaling 0.5. Alpha factors within MINNOISE models are factors that control the rate at which noise is propagated, or at what rate over distance, the noise is diminished. An Alpha factor of 0.5 within MINNOISE has a noise rate of decay of 4.5dB per doubling of distance. This is an appropriate value for propagation over soft ground with an at-grade roadway and first floor receptor.

MINNOISE calculates the amount of potential noise directly related to traffic speeds, traffic mix (% cars, trucks, heavy trucks), and peak hour percentages of predicted future traffic (Design Year 2033 “Build” and Design Year 2033 “No Build”). Traffic volumes were taken from the traffic analysis completed for the EA and were available for the “Daytime” and “Nighttime” peak volume times of:

- the hour from 4:30PM to 5:30PM (Daytime) and
- the hour from 6AM to 7AM (Nighttime).

Traffic counts were available along TH36, the on and off ramps for TH36, County Rd. B, and Rice Street for the peak times of morning rush hour 7AM to 8AM and evening rush hour 4:30PM to 5:30PM. The peak “nighttime” traffic hour (between 10PM and 7AM) was the hour between 6AM and 7AM. Traffic count information was only available along TH36 during the “nighttime” hours. No traffic count information was available for the on and off ramps to and from TH36 or along Rice St. and County Rd. B for the peak “nighttime” hour of 6AM to 7AM.

The percent change was calculated for the traffic counts along TH36 between the 6AM to 7AM hour and the 7AM to 8AM hour. The percent change (66%) from the available Hwy 36 data was then applied to traffic along Rice St., Cty. B, and the entrance and exit ramps to and from TH36. These calculated traffic counts are presented as the “nighttime” counts in **Table 5**.

Speed assumptions were based on posted speeds that range from 35mph to 55mph.

When noise impacts are identified, a noise wall mitigation analysis must be performed.

4.0 Noise Wall Mitigation Analysis

With noise levels exceeding state and federal noise standards, a mitigation analysis was required and completed to determine if measures, such as a noise wall, are reasonable and effective in attenuating the noise at those locations.

To have a noise wall considered for mitigation, one of the following factors must exist:

- The noise standards are presently in excess of state noise standards.
- The predicted noise levels are expected to be in excess of the state noise standards for the design year of the project.
- The noise levels are predicted to be “substantially” above current noise levels in the project design year. “Substantial” is defined as a 5dB or greater increase in noise.
- The predicted noise level for the design year approaches or exceeds the acceptable limit. “Approaching” is defined as noise levels being within 1dB of the FHWA NAC. In this instance, levels predicted as 69dB are considered approaching the FHWA NAC of 70dB.

If one or more of the above conditions are met, noise walls need to be considered based upon cost reasonableness and noise wall feasibility.

Taking these factors into consideration, there are 22 receptors within this analysis that exceed MPCA noise standards and merit noise wall consideration (Wall 1:R1 – R11, Wall 2: R22, and Wall 3:R27-R-28 and R30-R32C). It should be noted that R36-R38 are commercial properties and meet the FHWA criteria for developed land. Also, as stipulated in Minnesota Statute 116.07, Subd. 2a, Rice Street and County Rd. B are exempt from the state noise standards. The statute states:

(2a) “No standards adopted by any state agency for limiting levels of noise in terms of sound pressure which may occur in the outdoor atmosphere shall apply to (1) segments of trunk highways constructed with federal interstate substitution money, provided that all reasonably available mitigation measures are employed to abate noise, (2) an existing or newly constructed segment of a highway, provided that all reasonably available noise mitigation measures, as approved by the commissioners of the department of transportation and pollution control agency, are employed to abate noise, (3) except for the cities of Minneapolis and St. Paul, an existing or newly constructed segment of a road, street, or highway under the jurisdiction of a road authority of a town, statutory or home rule charter city, or county, except for roadways for which full access has been acquired”

These roadway improvements are only required to only meet the FHWA noise criteria outlined above in **Table 2**.

4.1 Noise Wall Modeling

Three 20 foot noise walls (Mn/DOT maximum) and three 10 foot noise walls, were placed within the MINNOISE model separately to gauge effectiveness during “worst case” scenarios for both daytime and evening time periods (for detailed MINNOISE information for noise wall analysis, please refer to Appendix A”MINNOISE Model Data”). These noise walls were analyzed between the homes and the roadway residing on:

- the north side of Highway 36, west of Rice Street (Wall #1),
- the north side of Highway 36 and the frontage road east of Rice Street (Wall #2), and
- the south side of Highway 36, west of Rice Street (Wall #3).

Figure 1 in Appendix B shows the locations of the modeled noise walls. Multiple scenarios were run to optimize the length of the noise walls. Only the wall length scenarios that showed the most effective noise reduction are included.

Table 6 illustrates the complete noise impact survey including Design Year 2033 levels without a noise barrier, Design Year 2033 with a noise barrier, and resulting noise level differences for the Daytime and Nighttime scenarios. **Table 6** also illustrates the modeled noise reduction with 10 and 20 foot walls at each receptor used in the model. The applicable noise standard for each receptor is also included in **Table 6** as well as the number of residences with at least a 5 dB reduction.

4.2 Cost-Effectiveness Analysis

A cost-effectiveness analysis has been performed as part of the documentation for this project. For noise walls to be considered reasonable, the cost effectiveness shall not exceed \$3,250 per decibel of reduction per residence. The cost effectiveness is calculated for individual barrier segments. For barriers to be warranted, they must be acoustically effective by providing a meaningful reduction in noise, defined as a five decibel reduction or more. The noise wall cost-effectiveness calculations are included in this report (**Table 6**). Noise walls might not be cost-effective for the following reasons:

- Topography may create a situation where a noise wall cannot effectively block the line of sight from the roadway to the receptor.

-
- Existing noise mitigation may cause a situation where additional mitigation does not provide additional noise-level reduction.
 - Cross-streets may create a situation where noise mitigation cannot be constructed continuously along the noise source.
 - Residential density is low.

Cost reasonableness calculations are included in **Table 6** for each modeled noise wall. Only one of the noise walls placed within the model to maximize decibel reduction at impacted receptors meet the Mn/DOT minimum criteria of \$3,250 per decibel of reduction per residence. Wall #1 achieved a cost of \$3,054 per decibel of reduction per residence. Wall #2 and Wall #3 do not meet the cost reasonableness requirement for wall consideration. The noise reductions per receptor less than 5dB are not included within the overall per Mn/DOT policy¹.

“Feasibility” is defined as whether a noise wall may be built considering proper setback, sight lines, and location. Based upon the location of the modeled Wall #1, taking into account the proper setback, sight lines, and location, Wall #1 is a feasible noise mitigation alternative.

4.3 Evaluation of Other Noise Abatement Measures

Noise walls have been chosen as the most cost-effective noise mitigation measure available for this project. Other noise mitigation measures have been considered, as listed in 23 CFR 772.13(c). They are addressed below:

- a. Traffic management measures:
The primary purpose of the facility is to move people and goods. Restrictions of certain vehicles or speeds would be inconsistent with the purpose of the project.
- b. Alteration of horizontal and vertical alignments:
The project was realigned for practical reasons based on grade and safety.
- c. Acquisition of real property or interests therein (predominantly unimproved property) to serve as a buffer zone to preempt development that would be adversely impacted by traffic noise:
Acquisition of property for noise mitigation purposes is not a part of the project scope. However, efforts will be made through local planning authorities to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized.
- d. Noise insulation of public use or nonprofit institutional structures:
This is a noise abatement measure that would not affect the noise level violations of Minnesota State Noise Standards because these standards are exterior standards. FHWA guidelines and Mn/DOT policy recommend that only public buildings, such as schools and hospitals, be considered for acoustical insulation.

5.0 Noise Analysis Conclusions and Summary

Traffic noise impacts occur for TH36 when modeled traffic noise levels approach or exceed the FHWA NAC-1 (70dB) level by one decibel, when impacts are modeled exceeding state noise guidelines, or those which noise levels exceed the FHWA NAC category B criteria of a 5dB or more increase per receptor. As stipulated in Minnesota Statute 116.07, Subd. 2a, Rice Street and County Road B are exempt from the state noise standards, therefore noise impacts occur when modeled traffic noise levels approach or exceed the FHWA NAC-1 (70dB) level by one decibel or those which noise levels exceed the FHWA NAC category B criteria of a 5dB or more increase per receptor.

A mitigation analysis was performed to gauge the effectiveness of a 20-foot noise wall placed at these receptors. The mitigation analysis revealed that a 20' noise wall at the location of Wall #1 is an effective noise mitigation alternative. Wall #1 also meets the Mn/DOT cost criteria of \$3,250.00 per decibel of reduction per residence, making it economically reasonable. Based upon the location of the modeled Wall #1, taking into account the proper setback, sight lines, and location, Wall #1 is also a feasible noise mitigation alternative. Taking this into account, a noise wall should be considered in the location of Wall #1 for design and construction.

As the final design stage of this project progresses, the noise analysis may need to be refined to take into account any major design changes. The construction materials, exact location, and height of this wall will be finalized during the detail design process and/or during the development of the noise exemption request, which will include coordination and timing of the construction with the City and the affected neighborhoods.

In this project, future noise levels exceeded both the Federal Noise Abatement Criteria and the State Noise Standards at many sensitive noise receptors. Therefore, noise abatement measures are proposed and are included in this analysis. The TH36 roadway improvements must comply with both the State of Minnesota Noise Standards and the Federal Noise Abatement Criteria. However, as stipulated in Minnesota Statute 116.07, Subd. 2a, the Rice Street and County Road B improvements are exempt from the state noise standards. To do this, all reasonable and feasible noise mitigation measures are planned as a part of the project. Even with these noise mitigation measures, the Minnesota Noise Standards are exceeded at locations south of TH36. Therefore, a Noise Standards Exemption Request is required to be submitted to the Commissioners of the MPCA and Mn/DOT. This document is a means of demonstrating that all reasonably available noise mitigation measures are employed as part of the project.

¹ Mn/DOT Noise Policy for Type I and Type II Federal-aid Projects as per 23 CFR 772
Authority: 23 U.S.C. 109(h), 109(I); 42 U.S.C. 4331, 4332; and 49 CFR 1.48(b).

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Table 4
Peak Daytime Noise Levels (4:30-5:30 PM)

MINNOISE Receiver (Number of Residences Represented)	Applicable Noise Standard	Existing Daytime	2033 Daytime L10 (dBA)	2033 Daytime L10 (dBA)	Applicable Noise Standard	Existing Daytime	2033 Daytime L50 (dBA)	2033 Daytime L50 (dBA)
	L10 (dBA)	L10 (dBA)	No Build	Build	L50 (dBA)	L50 (dBA)	No Build	Build
R1 (17)	65	66.6	67.2	67.9	60	64.5	65.2	65.5
R2	65	65.8	66.2	66.4	60	63.8	64.3	64.5
R3 (10)	65	64.8	65.2	65.4	60	63	63.5	63.6
R4	65	64.8	65.3	65.4	60	63	63.5	63.6
R5	65	65.1	65.5	65.6	60	63.2	63.8	63.8
R6	65	65.1	65.5	65.5	60	63.2	63.7	63.7
R7	65	65.6	66.0	65.9	60	63.6	64.1	64.1
R8	65	65.6	66.0	66.0	60	63.7	64.2	64.1
R9	65	66.0	66.4	66.3	60	64	64.4	64.4
R10	65	66.0	66.4	66.3	60	64	64.5	64.4
R11	65	66.4	66.8	66.6	60	64.3	64.8	64.6
R11A (4)	65	68	68.4	68.3	60	65.6	66.1	65.9
R11B (3)	65	68.3	68.7	68.5	60	65.7	66.2	66.1
R12	65	60.5	60.9	60.9	60	59.1	59.6	59.6
R13	65	59.4	59.9	59.9	60	58.1	58.7	58.7
R14	65	62.6	63.1	63.2	60	61	61.6	61.7
R15	65	60.4	60.9	61.0	60	59	59.7	59.7
R16	65	62.9	63.6	63.8	60	61.3	62.2	62.3
R16A	65	63.3	64.6	64.9	60	61.6	63	63.4
R17	65	60.4	61.5	61.7	60	59	60.3	60.5
R18	70	62.6	66.8	67.7	NA	55.9	62	62.9
R19	70	57.6	60.5	61.1	NA	54.4	57.8	58.5
R20	70	60.3	64.5	65.5	NA	53.9	60	60.9
R21	70	61.9	66.8	67.1	NA	54.4	61.4	61.9
R22	65	68.3	68.7	68.6	60	65.9	66.4	66.4
R23	65	63.4	63.8	63.8	60	61.7	62.3	62.2
R24	70	66.2	68.0	67.8	NA	61.9	64.5	64.2
R25	70	64.4	66.4	66.7	NA	60.2	62.9	63
R26	70	61.8	63.1	63.0	NA	59.9	61.4	61.2
R27	65	67.1	67.6	67.9	60	63.4	64.1	64.1
R28	65	65.3	65.9	65.7	60	61	61.7	61.7
R29	65	62.9	63.4	63.3	60	60.3	61	61
R30	65	66.5	66.9	67.0	60	63.5	64.1	64.2
R31	65	66.3	66.7	66.8	60	63.2	63.8	63.7
R32	65	65.5	65.9	65.8	60	63.2	63.7	63.6
R32A (3)	65	71	71.4	71.2	60	68.4	68.8	68.6
R32B (2)	65	67	67.3	67.2	60	64.9	65.3	65.1
R32C (3)	65	66.1	66.5	66.4	60	64.2	64.7	64.5
R33	65	64.4	65.1	64.9	60	60.1	60.8	60.7
R34	65	66.3	67.0	66.3	60	61.1	62	62.1
R35	65	60.8	61.5	61.3	60	59.2	60	59.8
R36*	70	59.7	60.4	60.4	65	58.3	59.2	59.2
R37*	70	68.7	69.1	69.1	65	66.5	66.9	66.9
R38*	70	66.4	66.9	66.9	65	64.4	65	65

 Represents those locations exceeding their applicable noise standards. Bold levels approach or exceed the FHWA Criteria of 70dB.

* Represent commercial properties residing within the MPCA NAC-2 Category.

NA: Not Applicable, Does not Apply to State Standards

Table 5
Peak Nighttime Noise Levels (6-7 AM)

MINNOISE Receiver (Number of Residences Represented)	Applicable Noise Standard	Existing Nighttime	2033 Nighttime L10 (dBA)	2033 Nighttime L10 (dBA)	Applicable Noise Standard	Existing Nighttime	2033 Nighttime L50 (dBA)	2033 Nighttime L50 (dBA)
	L10 (dBA)	L10 (dBA)	No Build	Build	L50 (dBA)	L50 (dBA)	No Build	Build
R1 (17)	55	65.5	65.7	65.8	50	62.8	63.2	63.3
R2	55	64.6	64.8	64.9	50	62	62.3	62.4
R3 (10)	55	63.6	63.8	63.9	50	61.1	61.5	61.6
R4	55	63.6	63.9	63.9	50	61.1	61.5	61.6
R5	55	63.9	64.1	64.2	50	61.4	61.8	61.9
R6	55	63.8	64.1	64.2	50	61.3	61.7	61.8
R7	55	64.3	64.6	64.7	50	61.8	62.1	62.3
R8	55	64.4	64.6	64.7	50	61.8	62.2	62.3
R9	55	64.7	65.0	65.1	50	62.1	62.5	62.6
R10	55	64.8	65.1	65.2	50	62.1	62.5	62.6
R11	55	65.1	65.4	65.5	50	62.4	62.8	62.9
R11A (4)	55	66.8	67.1	67.2	50	63.7	64.1	64.2
R11B (3)	55	67.1	67.3	67.4	50	63.9	64.2	64.4
R12	55	59.2	59.5	59.6	50	57.3	57.6	57.7
R13	55	58.1	58.4	58.5	50	56.3	56.7	56.8
R14	55	61.4	61.7	61.7	50	59.3	59.6	59.7
R15	55	59.1	59.4	59.5	50	57.3	57.6	57.7
R16	55	61.8	62.1	62.2	50	59.7	60.1	60.2
R16A	55	62.8	63.1	63.3	50	60.4	60.8	61
R17	55	59.6	59.9	60.1	50	57.7	58.1	58.3
R18	70	63.2	63.8	64.3	70	56.8	57.7	58.4
R19	70	57.6	58.0	58.4	70	54	54.6	55
R20	70	61.1	61.7	62.1	70	55	55.9	56.4
R21	70	63.1	63.7	63.9	70	56.2	57.2	57.5
R22	70	67.0	67.3	67.3	70	64	64.3	64.4
R23	55	62.1	62.3	62.4	50	59.8	60.2	60.3
R24	55	66.2	66.7	66.9	50	60.9	61.5	61.9
R25	70	64.8	65.3	65.5	70	59.4	60	60.3
R26	70	61.3	61.7	61.9	70	58.6	59	59.3
R27	55	65.2	65.7	65.9	50	61	61.6	61.7
R28	55	62.9	63.4	63.8	50	58.8	59.3	59.3
R29	55	60.9	61.3	61.6	50	58.2	58.7	58.8
R30	55	64.7	65.1	65.3	50	61.2	61.7	61.8
R31	55	64.4	64.8	65.1	50	60.8	61.3	61.5
R32	55	63.8	64.2	64.4	50	60.9	61.3	61.5
R32A (3)	55	69.7	70.0	70.1	50	65.6	66	66.2
R32B (2)	55	65.7	66.0	66.1	50	62.4	62.9	63
R32C (3)	55	64.8	65.1	65.2	50	61.8	62.3	62.4
R33	55	62.0	62.5	63.0	50	57.9	58.4	58.3
R34	55	63.8	64.4	64.9	50	59.2	59.7	59.5
R35	55	59.3	59.7	59.9	50	57.4	57.8	57.9
R36*	70	58.5	58.8	58.9	70	56.6	57	57.1
R37*	70	67.3	67.6	67.7	70	63.8	64.2	64.3
R38*	70	65.2	65.4	65.5	70	62.5	62.9	63

 Represents those locations exceeding their applicable noise standards. Bold levels approach or exceed the FHWA Criteria of 70dB.

* Represent commercial properties residing within the MPCA NAC-2 Category.

NA: Not Applicable, Does not Apply to State Standards

Table 6
Noise Barrier Cost Effectiveness

Wall	Receptor (Number of Residences Represented)	Land Use Activity	Modeled Existing	No Build 2033	Build 2033 with		Reduction	No. of Res. with 5 dBA reduction	Approx. Segment Length	Approx. Wall Height	Average dBA reduction	Cost Effectiveness Cost/dBA/Res	Proposed
					No Barriers	Barriers							
1	R1 (17)	Res	66.6	67.2	67.9	66.5	1.4	0	Build	10	1.5	NA	No
1	R2	Res	65.8	66.2	66.4	65.3	1.1	0					
1	R3 (10)	Res	64.8	65.2	65.4	63.8	1.6	0					
1	R4	Res	64.8	65.3	65.4	64.4	1.0	0					
1	R5	Res	65.1	65.5	65.6	63.8	1.8	0					
1	R6	Res	65.1	65.5	65.5	62.8	2.7	0					
1	R7	Res	65.6	66.0	65.9	61.4	4.5	0					
1	R8	Res	65.6	66.0	66.0	61.5	4.5	0					
1	R9	Res	66.0	66.4	66.3	63.3	3.0	0					
1	R10	Res	66.0	66.4	66.3	66.1	0.2	0					
1	R11	Res	66.4	66.8	66.6	66.3	0.3	0					
1	R11A (4)	Res	68	68.4	68.3	66.3	2.0	0					
1	R11B (3)	Res	68.3	68.7	68.5	66.4	2.1	0					
1	R12	Res	60.5	60.9	60.9	60	0.9	0					
1	R13	Res	59.4	59.9	59.9	59.4	0.5	0					
1	R14	Res	62.6	63.1	63.2	62.7	0.5	0					
1	R15	Res	60.4	60.9	61.0	60.8	0.2	0					
1	R16	Res	62.9	63.6	63.8	63.6	0.2	0					
1	R16A	Res	63.3	64.6	64.9	65	-0.1	0					
2	R22	Res	68.3	68.7	68.6	67.4	1.2	0	620	10	0.8	NA	No
2	R23	Res	63.4	63.8	63.8	63.3	0.5	0					
3	R27	Res	67.1	67.6	67.9	66.4	1.5	0	1800	10	0.7	NA	No
3	R28	Res	65.3	65.9	65.7	65	0.7	0					
3	R29	Res	62.9	63.4	63.3	62.9	0.4	0					
3	R30	Res	66.5	66.9	67.0	65.8	1.2	0					
3	R31	Res	66.3	66.7	66.8	66.4	0.4	0					
3	R32	Res	65.5	65.9	65.8	65.6	0.2	0					
3	R32A (3)	Res	71	71.4	71.2	69.5	1.7	0					
3	R32B (2)	Res	67	67.3	67.2	66.7	0.5	0					
3	R33	Res	64.4	65.1	64.9	64.4	0.5	0					
3	R34	Res	66.3	67.0	66.3	65.8	0.5	0					
3	R35	Res	60.8	61.5	61.3	61.3	0.0	0					
1	R1 (17)	Res	66.6	67.2	67.9	62.6	5.3	17	2380	20	4.9	\$3,054	Yes
1	R2	Res	65.8	66.2	66.4	60.8	5.6	1					
1	R3 (10)	Res	64.8	65.2	65.4	60.2	5.2	10					
1	R4	Res	64.8	65.3	65.4	61.2	4.2	0					
1	R5	Res	65.1	65.5	65.6	59.8	5.8	1					
1	R6	Res	65.1	65.5	65.5	58.7	6.8	1					
1	R7	Res	65.6	66.0	65.9	57.3	8.6	1					
1	R8	Res	65.6	66.0	66.0	57.2	8.8	1					
1	R9	Res	66.0	66.4	66.3	58.2	8.1	1					
1	R10	Res	66.0	66.4	66.3	62.2	4.1	0					
1	R11	Res	66.4	66.8	66.6	62.2	4.4	0					
1	R11A (4)	Res	68	68.4	68.3	61.3	7.0	4					
1	R11B (3)	Res	68.3	68.7	68.5	63.5	5.0	4					
1	R12	Res	60.5	60.9	60.9	57.3	3.6	0					
1	R13	Res	59.4	59.9	59.9	57.1	2.8	0					
1	R14	Res	62.6	63.1	63.2	59.7	3.5	0					
1	R15	Res	60.4	60.9	61.0	59.5	1.5	0					
1	R16	Res	62.9	63.6	63.8	61.8	2.0	0					
1	R16A	Res	63.3	64.6	64.9	64.7	0.2	0					
2	R22	Res	68.3	68.7	68.6	63.9	4.7	0	620	20	3.5	NA	No
2	R23	Res	63.4	63.8	63.8	61.6	2.2	0					
3	R27	Res	67.1	67.6	67.9	65	2.9	0	1800	20	3.8	\$8,809	No
3	R28	Res	65.3	65.9	65.7	63.9	1.8	0					
3	R29	Res	62.9	63.4	63.3	61.6	1.7	0					
3	R30	Res	66.5	66.9	67.0	63.5	3.5	0					
3	R31	Res	66.3	66.7	66.8	63.9	2.9	0					
3	R32	Res	65.5	65.9	65.8	62.4	3.4	0					
3	R32A (3)	Res	71	71.4	71.2	62.8	8.4	3					
3	R32B (2)	Res	67	67.3	67.2	62.2	5.0	2					
3	R32C (3)	Res	66.1	66.5	66.4	59.5	6.9	3					
3	R33	Res	64.4	65.1	64.9	62.6	5.4	1					
3	R34	Res	66.3	67.0	66.3	65.7	3.7	0					
3	R35	Res	60.8	61.5	61.3	60.9	0.4	0					

 Represents those locations exceeding their applicable noise standards. Bold levels approach or exceed the FHWA Criteria of 70dB.

* Represent commercial properties residing within the MPCA NAC-2 Category.

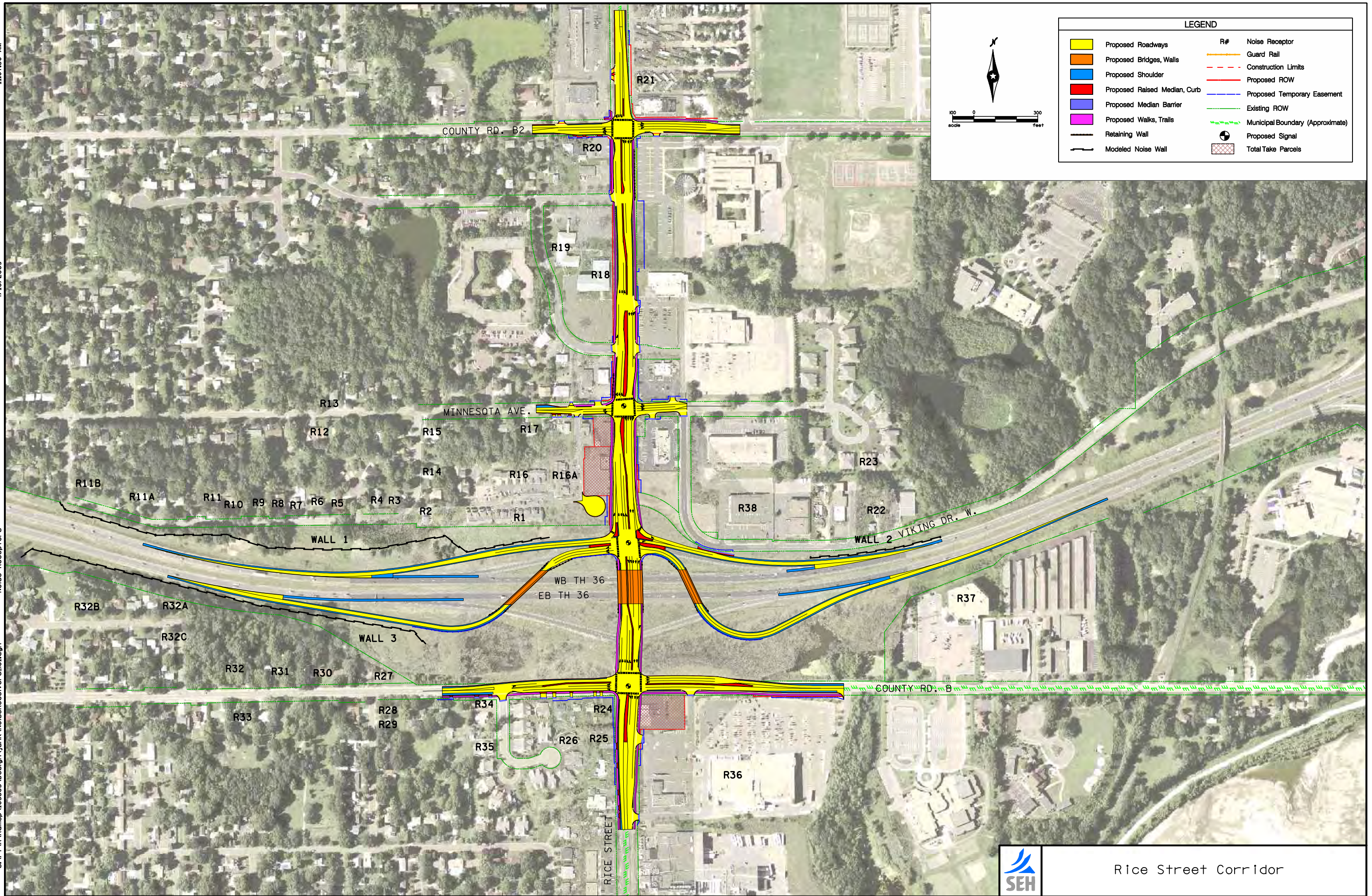
Appendix A

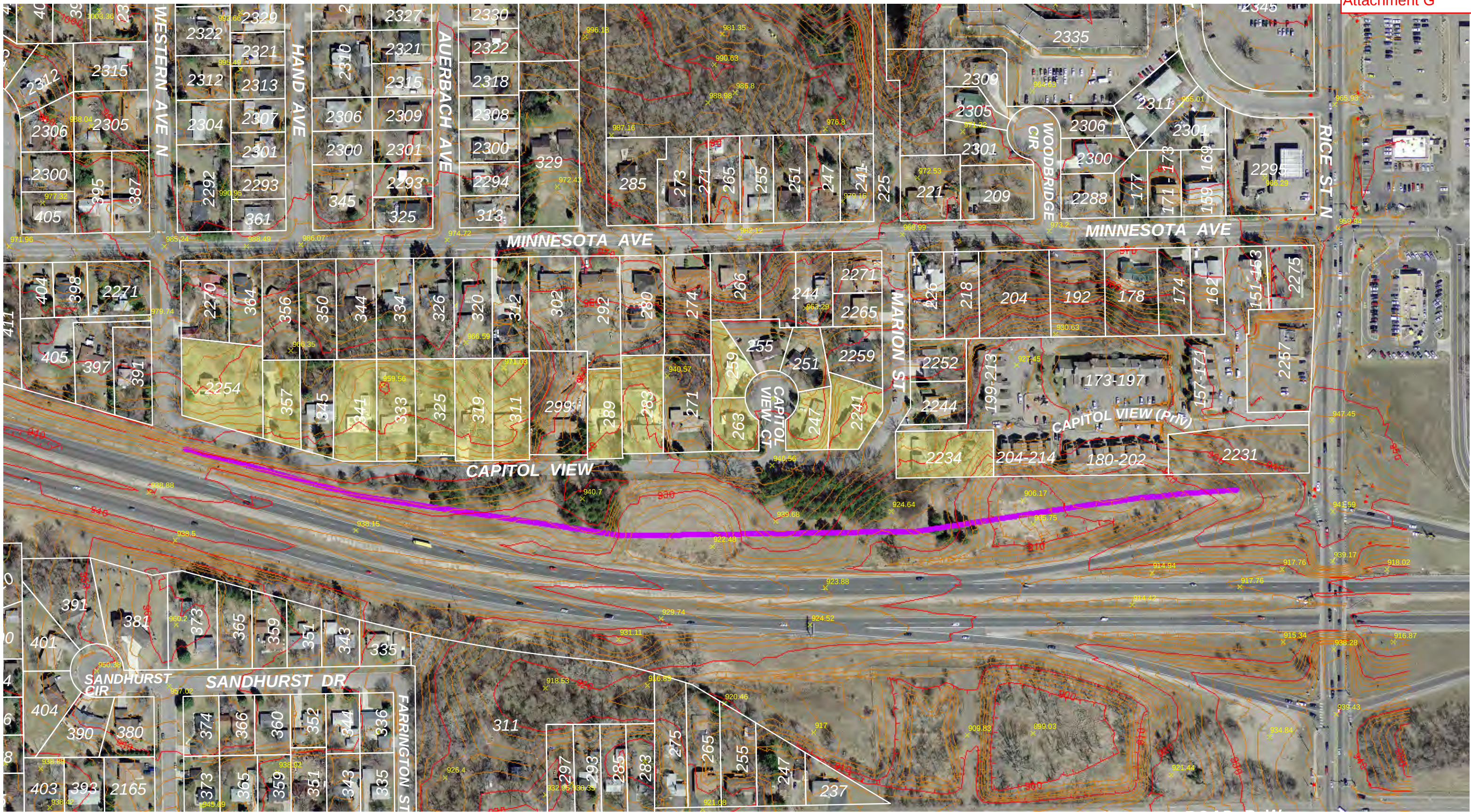
MINNOISE Model Data

(Attached CD)

Appendix B

Figure 1 Receptor Locations





Highway 36 Noise Wall



Prepared by:
Engineering Department
February 3, 2010

- Property That Does Not Support Wall Past Marion Street
- Proposed Noise Wall
- 10 foot contour
- 2 foot contour
- 10 foot depression
- 2 foot depression
- Spot Elevation

Data Sources and Contacts:
* Ramsey County GIS Base Map (1/04/10)
* City of Roseville Engineering Department
For further information regarding the contents of this map contact:
City of Roseville, Engineering Department,
2660 Civic Center Drive, Roseville MN

DISCLAIMER:
This map is neither a legally recorded map nor a survey and is not intended to be used as one. This map is a compilation of records, information and data located in various city, county, state and federal offices and other sources regarding the area shown, and is to be used for reference purposes only. The City does not warrant that the Geographic Information System (GIS) Data used to prepare this map are error free, and the City does not represent that the GIS Data can be used for navigational, tracking or any other purpose requiring existing measurement of distance or direction or precision in the depiction of geographic features. If errors or discrepancies are found please contact 651-792-7075. The preceding disclaimer is provided pursuant to Minnesota Statutes §466.03, Subd. 21 (2000), and the user of this map acknowledges that the City shall not be liable for any damages, and expressly waives all claims, and agrees to defend, indemnify, and hold harmless the City from any and all claims brought by User, its employees or agents, or third parties which arise out of the user's access or use of data provided.

0 50 100 150 200 Feet

mapdoc: Highway36NoiseWall.mxd
map: Highway36NoiseWall.pdf



To: Roseville City Council Members
Mayor Craig Klausing
Council Member Amy Ihlan
Council Member Jeff Johnson
Council Member Tammy Pust
Council Member Dan Roe

Date: February 3, 2010

Subject: Proposed vote on the noise wall for Rice Street / TH36 project

I (Ray McDonald) would respectfully propose the following criteria be considered when analyzing the discussion and possible vote for the noise wall at the next council meeting (February 8, 2010) or whenever the next vote is taken.

I would propose that the petition presented at the last council meeting be included as the starting point for the voting process.

I would propose that a written vote (yes / no) for the properties that would potentially benefit by noise reduction or be affected by the construction of the noise wall be considered.

At the next council meeting I would suggest that additional new votes be placed on a form that lists the address of the property, the person's name, the phone number, the vote either Yes or No, and a signature (similar to the petition) be used.

This method will help identify the votes of the beneficially affected properties and the votes of those properties that are not affected or benefited by the construction of a noise wall. I would submit that the votes of the properties that are not affected should not be considered in the voting results. I believe that only properties that will potentially gain a noise reduction benefit should be included in this vote. I do not believe that properties that will gain no benefit from the noise wall should be included in this vote.

The determination of the beneficially affected properties should follow the following criteria"

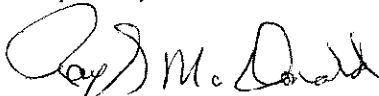
- Be within 200 (possibly 300) feet of the TH36 roadway.
- Be of an elevation that is low enough to be in the "shadow zone" of the noise barrier wall.

These parameters are taken from the Technical Information attachment from information that I got from searching various websites about traffic noise and noise barrier wall. Website links are given for all information sources.

For example, I would submit that the houses along Minnesota Avenue are at such a height or high elevation, that they would not be in the "shadow zone" of the noise wall and thus have little or no noise reduction. They also may also be too far away but that is not the point in this example.

I plan to be at the next council meeting and if I can be of any assistance in any way, please feel free to ask.

Respectfully Submitted



Ray S McDonald
2241 Marion Street.
Roseville, MN 55113

Technical Information for Noise Wall Presentation

"Highway traffic noise barriers:

- can reduce the loudness of traffic noise by as much as half;
- do not completely block all traffic noise;
- can be effective, regardless of the material used;
- must be tall and long with no openings;
- *are most effective within 61 meters (200 feet) of a highway (usually the first row of homes);*
- must be designed to be visually appealing;
- must be designed to preserve aesthetic values and scenic vistas;
- do not increase noise levels perceptibly on the opposite side of a highway; and
- substantially reduce noise levels for people living next to highways. "

<http://www.fhwa.dot.gov/environment/keepdown.htm>

"Sound reduction by distance

Sound spreading in open air and measured at a certain distance from the source is reduced by about 6 dB for each doubling of that distance. Sound is reduced less when spreading inside a room."

<http://www.barrhill.org.uk/windfarm/noise/basics/NOISE%20CONTROL.htm>

"Noise barriers are:

Most effective within 61 meters (200 feet) of a highway (usually the first row of homes)"

<http://www.virginiadot.org/projects/pr-noise-walls-about.asp>

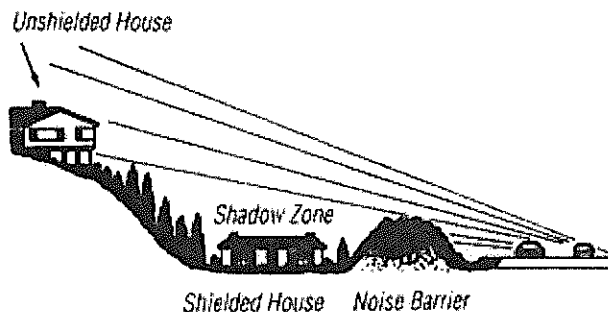
"Distance

Typically, a barrier is more effective the closer it is to the source or to the receiver. Noise barriers are generally only effective for homes within 300 ft. of the roadway."

<http://www.trafficnoise.org/>

Shadow Effect of Noise Barrier

The lower house is protected by the barrier, but the upper one is not.



www.fhwa.dot.gov/environment/htnoise.htm