



Rochester Hills Minutes - Draft

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MR-42E Noise Barrier/Sound Wall Technical Review Committee

Members: Paul Davis, Jennifer Lagerbohm, Charles Lam, Michael McGlynn, Doug Walther
Council Members: Erik Ambrozaitis, Greg Hooper
Youth Representative: Trip Brennan

Tuesday, November 10, 2009

6:00 PM

1000 Rochester Hills Drive - Conf. Rm. 130

CALL TO ORDER

Chairperson Mike McGlynn called the meeting to order at 6:03 p.m.

ROLL CALL

Present 4 - Greg Hooper, Jennifer Lagerbohm, Charles Lam and Michael McGlynn

Absent 1 - Erik Ambrozaitis

Charles Lam entered at 6:07 p.m.

Others Present:

Staff Present:

Paul Davis, City Engineer

Doug Walther, Deputy Director of Assessing

Others Present:

Trip Brennan, Rochester Hills Government Youth Council Representative

Rich Diem

James Masiak

Lynnette Nitsche

Olaf Nitsche

Noelle O'Neill (entered at 6:30 p.m.)

INTRODUCTIONS

PUBLIC COMMENTS

Lynnette Nitsche commented that on Monday, brush and trees were cleared and the fence removed near the Noise Barrier-10 section of M-59 exposing the highway to view. She questioned whether this was a part of work on the drain and whether the trees would be replanted.

Staff Member Paul Davis, City Engineer, responded that clearing lines and fence removal were noted on the plans for work on drainage. He commented that he would contact the Michigan Department of Transportation (MDOT) to

inquire about replanting and commented that the fence would most likely be replaced with a rolling wire fence.

***Rich Diem** questioned how the decibel ratings were determined, noting a rating of 77 for one area; and whether residential density is a consideration, pointing out that the density is high along the north side of M-59.*

***Olaf Nitsche** commented that the MDOT sound study did not consider the effects of walls on the opposing sides of the freeway, noting that this reflection of noise could raise other walls over 77 decibels.*

***Chairperson Mike McGlynn** stated that density will be considered along with other possible criteria to develop a ranking system.*

APPROVAL OF MEETING MINUTES

2009-0503 Approval of Meeting Minutes - October 13, 2009

Attachments: [101309 Minutes.pdf](#)
[Resolution.pdf](#)

A motion was made by Hooper, seconded by Lagerbohm, that the Minutes of the Meeting of October 13, 2009 be Approved as Presented. The motion CARRIED by the following vote:

Aye 4 - Hooper, Lagerbohm, Lam and McGlynn

Absent 1 - Ambrozaitis

Resolved, that the Minutes of the MR42-E Noise Barrier/Sound Wall Technical Review Committee meeting held on October 13, 2009 be approved as presented.

DISCUSSION ITEM

2009-0502 Discussion Regarding MR-42E Noise Barrier/Sound Walls

Attachments: [Noise Barrier Rating Form - Draft.pdf](#)
[Table 7 with MDOT updates.pdf](#)
[Masiak abstract.pdf](#)
[Agenda 101309.pdf](#)

***Chairperson Mike McGlynn** stated that a draft noise barrier rating form prepared by Paul Davis was included in the meeting packet. He noted that e-mails and documents were sent which included other items to consider and commented that there were many different ways to come up with the ranking criteria. He stated that the committee should work to categorize the different criteria and noted that it will be difficult to measure certain intangibles. He encouraged anyone to volunteer any ideas they had about the suggested ranking criteria.*

Member Jennifer Lagerbohm commented that rating on assessed value would negatively affect low-income housing.

Lynette Nitsche stated that the point of including assessed values as criteria is not to say that homes are worth more or less than others, but rather to show how the depreciation in values due to noise could have a ripple effect on the rest of the community.

Member Lagerbohm noted that the committee could possibly review value depreciation due to high noise as a percentage.

Olaf Nitsche stated that home values should be considered as a rating criteria as residents in his subdivision feel penalized because of having larger lots and more expensive homes.

Ms. Nitsche commented that MDOT considered density.

Staff Member Paul Davis, City Engineer, stated that Council's task to the committee was to look at the City as a whole and noted that the MDOT study did not include the area from Crooks to the westerly border of the City. He commented that the City does not have any sound study information dating back to when the portion of M-59 was improved between I-75 and Crooks Road 17 years ago and stated that he would contact MDOT to see if anything exists. He pointed out that one area in this westerly portion that will be determined to have more density is Providence Avon, the manufactured home community on the south side of M-59. He noted if no study of this area exists, some general assumptions will have to be made in order to arrive at cost comparisons among the twelve walls that do have cost figures and these to-be-determined walls.

Mr. Nitsche questioned whether a price per length and height of the wall had been obtained from MDOT to base a total cost of the walls which could be translated to this area. He mentioned 15 to 18 feet as a height of the wall in the area adjacent to his subdivision.

Mr. Davis responded that the height of the wall for NB-10 was in the range of nine to 15 feet and stated that the height will have a direct bearing on the resulting cost of the wall.

Ms. Nitsche pointed out that the area of M-59 to the west of the sound study area was predominantly industrial and commented that some information on this area should exist.

Member Greg Hooper stated that there are industrial areas on the north side, but the south side is residential.

Mr. Davis commented that MDOT would provide sound information for the westerly section of M-59, if it existed and was readily available, however, most likely it does not.

Member Hooper noted that the committee would most likely make

assumptions for that area if no information existed. He stated that the committee should be apolitical and look at the entire city.

Chairperson McGlynn questioned whether any berm currently existed in that area.

Mr. Davis reviewed the map of that westerly area of M-59 and noted that based on contour elevations there appears to be berm in some of the areas. He pointed out drainage ditches and storm sewer lines and commented that there would be limited ability to build a berm within the MDOT right-of-way. He stated that if no information exists, the committee will have to develop an estimate for wall length and resulting cost for comparison with the other areas. He commented that adding this area would make a difference in the ranking metric developed.

Jim Masiak discussed the number of criteria used for ranking, stating that it was good to have at least five or six criteria; however, having 20 would most likely be too much. He commented that ten ranking criteria could be a good number to use and noted that they should be mutually exclusive. He stated that it might not be good to use two items related specifically to the cost to build the wall; however, using a cost of maintaining the barrier or other ongoing operating expenses could be considered. He stated that the noise level should be considered independently of financial criteria or aesthetics.

Mr. Davis commented that although there is a correlation between the wall length versus cost, it was not entirely consistent as the walls reviewed by MDOT have varying heights.

Mr. Masiak stated that the type of barrier constructed also would affect wall cost, as one barrier could be concrete while another could be a berm.

Mr. Davis indicated that another criteria to be considered in developing the metric should be considering who wants a sound barrier the most, noting that resident associations might be willing to enter into a Special Assessment District to share costs. He noted that this could be considered as a future step to allow a homeowner's association to receive some type of priority for a wall segment.

Member Charles Lam stated that if two locations are rated equally, cost-sharing could be a criteria to give one location priority over another; however, he noted this was unlikely given the current economic climate.

Mr. Diem noted that including this criteria could determine ranking solely on the ability to pay.

Mr. Davis stated that he included arbitrary percentages of zero cost-share, 25 and 50 percent, but noted there could be different options depending on the subdivision's ability to participate.

Mr. Nitsche noted that this criteria is factored into the CIP.

Chairperson McGlynn questioned how the final ranking would translate to the CIP process.

Mr. Davis commented that MDOT has two walls that will be constructed, with the remaining ten currently lumped together; however, he envisioned at the end of the committee's ranking process that perhaps one or two additional wall projects would be considered for the CIP. He pointed out that currently, the ten unfunded walls were submitted as a single project for the CIP at an approximate cost of \$14 million. He explained that there is a similar ranking process through the CIP and noted that the total wall project ranked lower than the walls that were approved because the two walls to be constructed have funding sources and are to some extent mandated because the City receives Act 51 dollars. He noted that the CIP ranking process allocates extra points because of those funding conditions and mandates.

Member Hooper suggested that the committee should decide the total point system that the ranking would be based on, decide the number of criteria, and from there work to select the individual items. After criteria selection, a ranking and weighting of each item would be determined to narrow the focus.

Mr. Masiak stated that he reviewed the MDOT noise study calculations and noted that selective readings of 10 and 20 minutes were taken along the different sites. He stated that when he had taken measurements as a consultant, he would take them during a 24-hour period, day and night at different times of the week.

Mr. Nitsche commented that MDOT reported that all measurements were done on one day and all counts were for approximately 20 minutes. He noted that the readings taken to develop the model show variations, both plus and minus.

Mr. Masiak stated that the models would provide a best estimate and then show a range of variation. He commented that taking 24-hour samples would be very expensive. He stated that the types of traffic observed was most likely typical. He noted that if MDOT would have been more precise, perhaps, if more measurements were taken over the course of five days, Monday through Friday.

Ms. Nitsche commented that she did not feel comfortable with MDOT's 10 to 20 minute readings taken over approximately 10 points and then utilizing a model for the remainder of the locations.

Member Hooper noted that MDOT took the measurement points to confirm their model as accurate, and once confirmed, extrapolated the data for an added lane to develop an expected noise level after the expansion.

Mr. Masiak commented that from a procedural standpoint, the results would have been more precise with more measurements. He pointed out that the model is based on traffic flow and stated that MDOT has much data on the volumes of vehicles, the types of vehicles, the distributions and distances to locations.

He noted that before computers were used to run the models, more measurements were required for those computations.

***Member Lam** requested that Mr. Masiak discuss MDOT's calculation of the improvement in the noise levels after the barrier is constructed. He questioned how the distance of the barrier from the actual sound source and height of the barrier would influence the sound levels.*

***Mr. Masiak** responded that the elevation issues influence the improvement. He commented that MDOT's figures were probably within a couple of decibels of what the actual measured amount will be.*

***Mr. Nitsche** commented that MDOT developed NB-6A as the original NB-6 was just below the criteria for funding.*

***Member Lam** questioned how much value should be given to the potential improvement in sound, as it is difficult to determine how accurate the calculations are.*

***Mr. Masiak** responded that cost would be high on the list.*

***Mr. Nitsche** indicated that the same type of wall was used in different scenarios, noting that berms were not considered in the models.*

***Mr. Davis** stated that MDOT builds concrete walls as they can be assured that a concrete wall provides a five decibel reduction in noise.*

***Mr. Masiak** stated that the model uses the same barrier everywhere, using a four pound per square foot number for surface density. He commented that the noise coming over the top of the barrier is controlled by height. He pointed out that berms are not included in the model.*

***Chairperson McGlynn** directed the discussion to setting the categories for the ranking parameters.*

***Mr. Masiak** commented that having a list of ten ranking criteria with a rating of 100 percent total would space out the ranking to best separate one project from another. He noted that increasing the criteria to 20 could bring the range together and make it more difficult to separate the projects.*

***Member Lam** commented that performance within each ranking category should be kept consistent while the categories themselves could be given weight based on importance.*

Committee members discussed the noise level information contained in MDOT's Table 7 (updated) and noted that the existing noise levels and future levels were given in ranges.

***Chairperson McGlynn** discussed noise level-based criteria, and noted that predicted peak noise levels could be used from the MDOT report. He stated*

that the Committee should decide whether the peak, the low, or the average noise levels should be used in ranking; questioned whether information on each individual unit should be used and how future noise levels should be incorporated.

Member Lagerbohm commented that Peak LEQ (Equivalent Continuous Noise Level) without a barrier should be used in the Metric.

Member Hooper questioned whether the Peak LEQ reading was obtained at an isolated spot or whether this level persistently exists.

Discussion ensued on how the different areas should be ranked as some locations had only a few homes very close to the freeway generating the high decibel readings with others much further away.

Chairperson McGlynn questioned if 20 measurement points existed, whether all 20 measurements could be included.

Mr. Nitsche expressed concern that including that level of detail in measurement could also lead to questions as to whether to include the types of housing and the number of stories of each dwelling unit. He stated that the highest level in the range should be used and population density should be included.

Mr. Davis stated that noise levels exist for all 312 points in the model and noted that one individual wall might have 20 points while another has 30 points of measurements. He pointed out that either an average of all points or the peak values could be used in the rankings.

Member Lagerbohm stated that she would recommend using the peak values, noting the short timeframe used for collection of the raw data.

Member Lam stated that if there was any question on the accuracy of the data, utilizing one point might not be appropriate and an average might be more accurate.

Mr. Nitsche noted in reviewing the data for Noise Barrier-1 that seven units would be attenuated with a projected noise range of 72 to 75 without a barrier. He noted that the model projects that those seven homes would have values of 65 to 67 after the construction of a barrier.

A question was raised whether utilizing the peak value would benefit the home closest to M-59, and whether it would be more appropriate and fair to use an average value.

Mr. Davis responded that it is not necessarily the closest unit that receives the most noise and commented that topography influences noise. He commented that Country Club Village is a good example where some homes actually shield others and elevation differences lead to homes further away being deemed benefitting units.

Mr. Masiak stated that, for example, in NB-5, a unit with a peak level of 75 LEQ, would achieve a reduction to 67 decibels after construction of a barrier. He commented that including an average could penalize the person close to M-59.

Ms. Nitsche commented that incorporating population density could provide a compromise.

Chairperson McGlynn questioned whether any further discussion was warranted on the ranking criteria of taking predicted peak noise levels.

Member Hooper stated that he agreed with taking the largest point within a wall segment to determine ranking.

Chairperson McGlynn questioned if the Committee also wanted to consider whether the ranking criteria should include the units receiving the largest reduction in noise after the construction of a wall, noting this would determine who would get the most benefit from a noise barrier.

Mr. Davis indicated that including this criteria as well might be redundant to including peak noise levels.

The Committee agreed and determined that including this criteria was not preferred.

Chairperson McGlynn questioned whether the reflection of sound from a noise barrier constructed across M-59 should be taken into account. He noted that MDOT indicated that the original version of their modeling software did not take sound reflection into account.

Mr. Masiak stated that there would be some small increase, but it would depend on how close the other barrier was to the road. He noted that the increase due to the noise barrier to be constructed on the south side would be quite small unless the barrier was constructed very close to the road surface. He commented that the increase in noise could be at most approximately three decibels, however, it would be attenuated by distance and would most likely be less than that. He noted that a lot of energy is lost in the process of carrying the sound and commented that he agreed with MDOT that this would not be a significant consideration.

Member Hooper commented that if reflective noise was included as a criteria, only one wall would be affected by this criteria.

Mr. Nitsche commented that as additional walls are constructed, more areas will experience the potential for reflective noise. He noted that this criteria could be considered as a moving target and adjustments to rankings might need to be made as the ranking process progresses.

Mr. Davis commented that he was not in favor of including reflective noise due to opposing barriers in the criteria and stated that if the committee decided to

include this criteria, it should not be given much weight as the effect would be negligible.

Mr. Nitsche indicated that this criteria should be included as even a three decibel increase could change a wall's ranking. He stated that increasing the noise levels for NB-10 could raise the ranking of that wall to higher than its present ranking of number four.

Mr. Davis commented that there is not proof to support using a three decibel increase for reflective noise. He stated that three decibels is not considered perceptible.

Discussion ensued as to whether the increase in reflective noise would be perceptible and how to include this criteria for walls with opposing barriers versus walls without opposing barriers.

Mr. Davis stated that the task should be to rank the walls as they are presented as there is no determination at this point that any additional walls would be built.

Noelle O'Neill stated that a substantial amount of research exists from European countries regarding noise reflection and noted that this research was done in areas with a much denser concentration of population. She noted that studies she had read on the Internet indicate that at least a three decibel increase could be experienced. She questioned whether the committee would consider including this criteria and incorporating measurements taken after the construction of the approved walls.

Chairperson McGlynn questioned how to incorporate the number of benefitting units into the ranking criteria and how to determine where to cut off the level of benefit. He questioned whether the cutoff should be a five decibel decrease or whether to include units that might receive a lesser decrease, such as four decibels. He further questioned how to count the number of dwelling units or homes.

Member Hooper suggested that the number of single residences should be considered as one unit each, commenting that a five bedroom home should not be given more weight than a two bedroom home or a condominium or apartment unit. He questioned whether considering a distance of 500 feet away from M-59 would be measured from the travel lane or the right of way.

Mr. Davis responded that the setback distance is measured from the edge of the highway. He commented that the MDOT study notes that the setback distance for achieving a five decibel decrease varies, and noted that 500 feet is used as a rule of thumb. He explained that if a five decibel decrease could be achieved in 500 feet, another five decibel decrease might be realized at 1,000 feet. He commented that if the City could obtain MDOT's software program, it could run scenarios where the City could vary the wall height and see how it affects setback distance and compare this to the cost increase for a wall.

Chairperson McGlynn requested that Mr. Davis discuss including total homes

versus benefitting units. He commented that NB-10 had only 44 benefitting units but had more homes that were not considered benefitting units.

Mr. Davis commented that the ranking committee should choose either one criteria or the other. He noted there would be benefits to utilizing the MDOT study information and commented that a rule of thumb metric could be determined to cover the area west of Crooks.

Member Lagerbohm stated that average household size might also be considered to adjust for ranking condominiums, apartments and homes with larger lots.

Mr. Davis commented that the City has had to develop estimates of population in conjunction with sewer projects to determine the return rates of water. He noted that a mobile home might be considered to have fewer people than an apartment, and fewer than perhaps a single family home. He noted that it would have to be agreed what the factors are for each category. He noted that it would be much easier to count units than estimate population.

Discussion ensued as to what records the City might have as to population.

Chairperson McGlynn pointed out that MDOT used benefitting units as the criteria to determine whether an area would qualify for a wall. He noted that the committee has three possibilities to consider: homes, benefitting units, or population. He noted that perhaps from a taxpayer standpoint, it should be considered how many individuals would benefit from a wall.

Member Hooper questioned whether the assessor could provide information on number of bedrooms.

Mr. Nitsche commented that number of units should be considered as it would be easy to determine a distance and count homes. He noted that not all bedrooms in a dwelling are occupied.

Discussion ensued as to how to rank apartment complexes, senior housing and attached condominiums. It was further discussed that only first floor apartment units, and those facing M-59 would benefit from a sound barrier.

Member Hooper commented that there would be no attenuation for second or third floor units.

Chairperson McGlynn reviewed a suggestion that the elevation difference between the first homes and M-59 be considered.

Mr. Davis indicated that he included elevation as possible criteria as it could provide a determination of how effective a noise barrier might be.

It was discussed that the model would take elevation into account by determining the height, and subsequently the cost of a barrier. It was determined that including elevation as a separate criteria was redundant.

Chairperson McGlynn questioned whether the height of adjacent homes should be considered.

Mr. Davis responded that MDOT's sound study determines what the sound wall will deliver at ground level and commented that this criteria could be eliminated.

Mr. Masiak pointed out that residents in second-floor bedrooms would hear noise no matter what. He noted that the only way to solve noise traveling to second floor bedrooms would be to double the height of the barrier.

Member Hooper discussed noise barriers along I-275 and questioned whether MDOT would be willing to allow a barrier wall to be built on the shoulder of M-59. He noted that the location of the wall could affect the noise.

Discussion ensued on how sound could travel and be bent or deflected based on where the wall might be located. The committee also discussed whether additional factoring should be included for second floor bedrooms.

Mr. Masiak commented that measurements of sound levels would be less accurate at higher points because of the influence of wind gradients and temperature inversions.

Mr. Davis commented that the elevation and type of home could be considered; however, it would take additional work, noting that this was not considered in MDOT's study.

Member Lagerbohm noted that some weight could be given to the elevation of the home and the elevation of the location where residents were sleeping.

Member Hooper questioned whether assessing data could be reviewed for homes within 500 feet.

Staff Member Doug Walther, Deputy Director of Assessing, indicated that this information could be fairly readily available as to which homes were one-story and which were two-story.

Chairperson McGlynn questioned how public places should be evaluated. He noted that the MDOT report gave public places ten ranking points.

Mr. Davis pointed out that MDOT's criteria included a narrow interpretation of public place and did not include a subdivision pool or tennis court.

Mr. Nitsche questioned how a subdivision with a pool, walking trail and tennis court would be counted.

Discussion ensued whether to rank certain items, such as a subdivision pool, with a higher weight or to just count each item. It was also discussed how this could be unfair to a trailer park or subdivision that did not have these amenities and noted that subdivision amenities are not open to the public.

Mr. Davis stated that he thought some consideration of subdivision amenities should be included; noting that even though a resident's home may not be affected by M-59 noise, when this resident tries to enjoy his subdivision facility, he is affected by the noise.

Mr. Masiak commented that Thelma Spencer Park provides a great deal to the residents of the city and receives a tremendous amount of traffic.

Ms. O'Neill commented that the beaches at Thelma Spencer are beyond the noise impact distance.

Mr. Masiak commented that public points could be rated higher.

Mr. Nitsche commented that these subdivision areas should be accounted for in the ranking as these areas could have been developed as lots which would include additional homes that would have qualified. He commented that Country Club Village has 250 homes that can utilize the pool and this is far more homes than are within the 500 foot distance.

Mr. Masiak commented that the benefit is not spread over all residents, noting, for example, that he would not be able to access Country Club Village's tennis courts.

Chairperson McGlynn commented the public uses should have some consideration.

Discussion ensued as to whether to include churches and daycare centers. It was noted that MDOT did not give churches any consideration in the study.

It was determined that an additional meeting would be needed to continue discussions and that a decision matrix provided by Mr. Masiak at the meeting would be forwarded to committee members.

Discussed.

NEXT MEETING AGENDA

REVIEW TIMELINE

ANY OTHER BUSINESS

None.

NEXT MEETING DATE

- Monday, November 30, 2009, 6:00 P.M.; Tuesday, December 8, 2009, 6:00 P.M.

ADJOURNMENT

The meeting was adjourned at 8:03 p.m.

Minutes were approved as presented at the (insert date) MR42-E Noise Barrier/Sound Wall Technical Review Committee Meeting.

MIKE McGLYNN, Chairperson

*Prepared by Mary Jo Whitbey
Administrative Secretary, City Clerk's Office*