

It is expected that a Quorum of the Personnel Committee, Board of Public Works, and Common Council will be attending this meeting: (although it is not expected that any official action of any of those bodies will be taken)

**CITY OF MENASHA  
BOARD OF APPEALS  
Room 133, Menasha City Center  
100 Main Street, Menasha  
October 12, 2018  
8:30 AM**

**AGENDA**

- A. CALL TO ORDER
- B. ROLL CALL
- C. PUBLIC HEARING
  - 1. Request for internal illumination and Electronic Message Center (EMC) monument sign at St. Mary's Elementary School, 540 Second Street, Menasha
- D. MINUTES TO APPROVE
  - 1. Board of Appeals, 6/8/17.
- E. ACTION ITEMS
  - 1. Request for internal illuminated and Electronic Message Center (EMC) monument sign at St. Mary Elementary School located at 540 Second Street, Menasha.
- F. ADJOURNMENT

**City of Menasha  
Board of Zoning Appeals  
Public Hearing**

A Public Hearing will be held by the Board of Zoning Appeals on October 12, 2018 at 8:30 a.m. in Room 133 Menasha City Center, 100 Main Street, Menasha, WI to hear a request to install an internal illuminated and Electronic Message Center (EMC) monument sign at St. Mary Elementary School located at 540 Second Street, Menasha.

Absent a variance this action would constitute a violation of Section 13-1-66, which limits the lighting of a monument sign to external illumination only and Section 13-1-67(d) which restricts Electronic Message Centers in the R-1 Single Family Residence Zoning District.

All interested persons objecting to or supporting this appeal are requested to be present. Written comments may be considered by the Board.

Deborah A. Galeazzi, WCMC  
City Clerk

Publish: Oct 1, 2018

CITY OF MENASHA  
BOARD OF APPEALS  
Third Floor Council Chambers  
140 Main Street, Menasha  
June 8, 2017  
MINUTES

*2:30 PM – Public Hearing – Request for internal illumination monument sign at  
St. Timothy Church, 473 Seventh Street, Menasha*

Chairman Evenson opened the public hearing.

CD Coordinator Heim read a letter received from Sharon Krueger, 701 Racine Street, Menasha. Ms. Krueger stated she objects to granting a variance to St. Timothy Church as she would prefer not to look out her window at a lighted sign.

No one spoke. Chairman Evenson closed the public hearing.

A. CALL TO ORDER

Meeting called to order by Chairman Evenson at 2:31 p.m.

B. ROLL CALL/EXCUSED ABSENCES

PRESENT: Commissioners Koslowski, Rashid, Evenson

EXCUSED: Commissioners Kubiak and Tines

ALSO PRESENT: CDD Buck, CDC Heim, Clerk Galeazzi, Sharon Bolls and Kelsey Hayes from TLC Sign, Greg Obersadt and David Skarsten from St. Timothy Church.

C. MINUTES TO APPROVE

1. Board of Appeals, 1/25/17.

Moved by Comm. Rashid seconded by Comm. Koslowski to approve minutes.

Motion carried on voice vote.

D. ACTION ITEMS

1. Request for internal illumination monument sign at St. Timothy Church, 473 Seventh Street, Menasha.

CDD Buck gave an overview of the variance request. He explained City Zoning Ordinance does allow for an external monument sign in R-1 Single Family Residential District. St. Timothy Church is located in R-1 District. All other aspects of the sign request meets Zoning Ordinance standards including size, height, setback and materials. Staff finds that no hardship exists without the variance, there is no unique situation, and granting the variance may set a precedent.

Sharon Bolls and Kelsey Hayes from TLC Sign Inc. explained external illumination would most likely be flood lights which could cause issues with vandalism and be a distraction to vehicle and pedestrian traffic. Internal illumination could be adjusted to be less distracting.

Greg Obersadt from St. Timothy Church stated the goal of St. Timothy Church is to attract more people to their church and the internal illumination monument sign would be more visible and less subject to vandalism.

General discussion ensued on the current zoning code and the sign at Menasha High School located across the street from St. Timothy Church.

Moved by Comm. Rashid seconded by Comm. Koslowski to deny request for internal illumination monument sign at St. Timothy Church as it does not meet standards under City Zoning Code.

Motion carried on voice vote – all voting aye.

E. ADJOURNMENT

Moved by Comm. Rashid seconded by Comm. Koslowski to adjourn at 3:10 p.m.

Motion carried on voice vote.

Deborah A. Galeazzi, WCMC  
City Clerk



May 21, 2018

St. Mary Elementary School  
Attn: Lyssa King  
540 Second Street  
Menasha, WI 54952

Dear Ms. King:

City of Menasha zoning code procedures require issuing a denial of your sign request in order to initiate the variance process. This letter constitutes a formal denial of your request to install an internally illuminated and Electronic Message Center (EMC) monument sign at St. Mary Elementary School located at 540 Second Street, Menasha (Parcel #1-00207-00; part of St. Mary's Congregation). Absent a variance, this action would constitute violations of Sections 13-1-66 which limits the lighting of a monument sign to external illumination only and 13-1-67(d) which restricts Electronic Message Centers in the R-1 Single Family Residence Zoning District.

Enclosed you will find the application and procedure for submittal of a zoning variance. Once the application and fee are received, the City Clerk will schedule a Board of Appeals meeting. The City Clerk will notify you of the date, time, and location of the meeting.

If you have any questions about the proceedings, please feel free to call.

Sincerely,

Kristi Heim  
Community Development Coordinator

Enclosures(4)

c: City Attorney Pam Captain  
City Clerk Deborah Galeazzi  
Community Development Director Sam Schroeder  
Associate Planner Joe Stephenson



# City of Menasha Application Appeal or Variance

SUBMIT TO:  
City of Menasha  
Dept. of Com. Development  
100 Main Street, Suite 200  
Menasha, WI 54952-3190  
PHONE: (920) 967-3650

## APPLICANT INFORMATION

Petitioner: St Mary Elementary School Date: 7.1.18  
Petitioner's Address: 540 2nd St City: Menasha State: WI Zip: 54952  
Telephone #: (920) 7255351 Fax: ( ) Other Contact # or Email: king-lyssa@yahoo.com  
Status of Petitioner (Please Circle): Owner Representative Tenant Prospective Buyer  
Petitioner's Signature (required): [Signature] Date: 7.1.18

## OWNER INFORMATION

Owner(s): St Mary ~~Elem~~ Parish Date: 7.1.18  
Owner(s) Address: 540 2nd St City: Menasha State: WI Zip: 54952  
Telephone #: (920) 7255351 Fax: ( ) Other Contact # or Email: ssiege1@smcatholic  
Ownership Status (Please Circle): Individual Trust Partnership Corporation Schools.org  
Non Profit Arch Diocese Green Bay

### Property Owner Consent: (required)

By signature hereon, I/We acknowledge that City officials and/or employees may, in the performance of their functions, enter upon the property to inspect or gather other information necessary to process this application. I also understand that all meeting dates are tentative and may be postponed by the Community Development Dept. for incomplete submissions or other administrative reasons.

Property Owner's Signature: See Attached Application Questionnaire Date: \_\_\_\_\_

## APPEAL OR VARIANCE INFORMATION

Address/Location of Appeal/Variance Request: 540 Second Street (213 Appleton St)  
Tax Parcel Number(s): 1-00207-00  
Reason for Appeal/Variance Request: Electronic Message Sign

Zoning Adjacent to the Site:

North:	<u>R-1 (4 parcels), R-2 (1 parcel), C-1 (2 parcels)</u>
South:	<u>R-1 (2 parcels), R-3 (1 parcel), R-2 (1 parcel)</u>
East:	<u>R-1 (3 parcels), R-2 (1 parcel)</u>
West:	<u>R-1 (2 parcels)</u>

Staff [Signature] Date Rec'd 8/3/2018

**City of Menasha  
Variance Application Questionnaire**

**Applicant:** St Mary Parish

**Site Address:** 540 2nd St

Menasha Ordinance 13-1-53(d) provides that the Board of Appeals shall evaluate a variance request based on the foregoing criteria. Before granting such a request, the Board must find that all of the criteria enumerated apply to the variance requested. Please address each statement; use additional sheets if necessary.

Describe the hardship to the property owner that would result if the variance were not granted and the exceptional, extraordinary, or unusual circumstance or conditions applying to the lot or parcel, structure, use, or intended use that do not apply generally to other properties or uses in the same district:

- an EMC sign would increase visibility creating a safer environment for drivers looking for the building
- statistics show that slowing to read a poorly lit sign causes traffic congestion and increases danger of pedestrian traffic. (see attached report)

Explain why the conditions upon which the petition for the variance is based are unique to the property and necessary for the preservation and enjoyment of substantial property rights possessed by other properties in the same district and same vicinity:

- increased visibility for school and church
- safety for traffic
- safety in school zone
- safety for pedestrian traffic

Provide evidence demonstrating that the purpose of the variance is not based exclusively upon a desire to increase the value or income potential of the property:

we are a non-profit parish and school only looking to provide services to the community

Describe how the granting of the variance will not be detrimental to the public welfare or injurious to the other property or improvements in the neighborhood in which the property is located:

EMC would not face any residential properties. We have spoken to residential property owners and they are all in agreement with an EMC sign.

Explain why the proposed variance will not undermine the spirit and general or specific purposes of the zoning code:

St Marys school and parish is about families and community. We want to be able to inform the families in the neighborhood of programs and activities while being a good partner to the City and City developers.

Please submit a site plan showing an accurate depiction of the property and any other relevant or required documents.

**I certify that all information provided is to the best of my knowledge accurate and true.**

Property Owner:

Steve Siegel  
Signature

Date:

8/31/18



## **LED SCHOOL SIGNS**

### **Benefits to having an LED message Center for a SCHOOL:**

- Let parents know about the great things happening at your school!
- Congratulate student or faculty achievements and awards.
- Celebrate important staff milestones such as 5, 10, and 20 year employment anniversaries.
- Recognize students' participation and achievements for regional competitions, science fair participation and placement, student of the month, etc.
- Announce school functions, sporting events, and special occasions.

Increase participation at events and school functions by promoting them early and often.

### **Enter the digital world and enhance your school image!**

When digital signage is discussed, most of the conversation is mostly regarding commercial and retail applications. Educational institutions are only now learning how digital school signs can be integrated into their campus culture. For running a successful school, outreach is a very important aspect. A school isn't just a place where students are left for eight hours every day. It is a community where a bunch of activities take place and loads of announcements are going on at any given time. Whether the announcement is to convince people to come to a big game or simply to advise students regarding prevailing and upcoming weather conditions, effective communication systems are a must. With the help of electronic signs for schools, you can communicate the information in a sensible, timely and topical manner.

LED school signs are the perfect outreach that your school is looking for and is an investment where returns are massive. Whether it is the hallway or the visitor center or the bookstore on your school campus, every room can benefit from digital signage. Many schools from kindergarten up to colleges have already incorporated this technology into their day-to-day lives and have seen major benefits. With content management software that is very simple to use, countless advantages can be seen over traditional ways of displaying messages. In fact schools who made the switch are now wondering why bulletin boards were used in the first place!

We have seen how campuses have transformed into the digital signage world and how it can positively affect the communication and brand image of the school.

Furthermore, with LED signs your school will stand out and attract the attention of every passerby! So what better way is there to let the entire community know about the great things taking place in your school? LED school signs are more energy efficient and long lasting than any other type of illuminated sign. Changing content has never before been so easy. Use these signs to the maximum capacity of your imagination and just watch how it can do wonders. Invest in an LED sign and announce, recognize, congratulate and celebrate not just with staff and students but with the entire community around you.

### **Why invest in LED School Signs?**

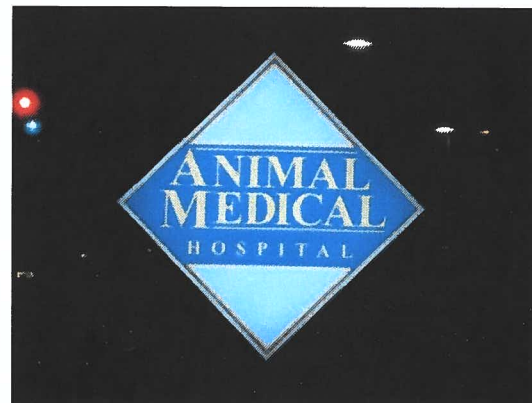
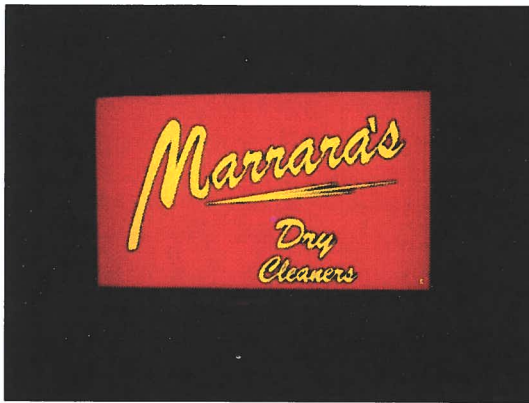
- Technology is everywhere. Why not in schools?
- Makes communication much easier
- Informs the community about the happenings inside your school

In today's era, there is constant evolution in the kind of technology used in a classroom and this has a direct impact on the way a student obtains education. Furthermore, students themselves have a range of technological devices available at their disposal. In reality, every student owns at least a laptop/tablet and a smart phone. Therefore, to communicate with these 'tech savvy' students, it is essential for your school to keep updated with the technology inside out. The exterior of your school can be easily and quickly improved with the use of LED school signs to show students, parents and teachers what your school is capable of being.

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# Internal vs. External On-Premise Sign Lighting: Visibility and Safety in the Real World

Prepared for  
United States Sign Council Foundation



## FINAL REPORT

February 2009

Prepared by Philip M. Garvey, Martin T. Pietrucha,  
Steve Damin and Damian Deptuch

## PENNSTATE



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<b>1. Report No.</b> PSU-2008-02		<b>2. Government Accession No.</b>		<b>3. Recipient's Catalog No.</b>	
<b>4. Title and Subtitle</b>  Internal vs. External On-Premise Sign Lighting: Visibility and Safety in the Real World				<b>5. Report Date</b> February 2009	
				<b>6. Performing Organization Code</b>	
<b>7. Author(s)</b> Philip M. Garvey, Martin T. Pietrucha, Steve Damin and Damian Deptuch				<b>8. Performing Organization Report No.</b> PTI 2008-22	
<b>9. Performing Organization Name and Address</b>  The Thomas D. Larson Pennsylvania Transportation Institute The Pennsylvania State University 201 Transportation Research Building University Park, PA 16802				<b>10. Work Unit No. (TRAIS)</b>	
				<b>11. Contract or Grant No.</b> IUCRA 105569 DTRT07-G-0003	
<b>12. Sponsoring Agency Name and Address</b>  United States Sign Council 211 Radcliffe Street Bristol, PA 19007  U.S. Department of Transportation Research and Innovative Technology Administration 3rd Fl, East Bldg E33-461 1200 New Jersey Ave, SE Washington, DC 20590				<b>13. Type of Report and Period Covered</b> Final Report 7/1/2008 – 2/28/2009	
				<b>14. Sponsoring Agency Code</b>	
<b>15. Supplementary Notes</b> COTR: Andrew Bertucci, 215-785-1922, <a href="mailto:andy@ussc.org">andy@ussc.org</a>					
<b>16. Abstract</b> Poorly visible on-premise commercial signs have been associated with reduced safety, as drivers trying to locate and make sense of these signs may drive slower than the rest of traffic and perform erratic, last-second maneuvers. One of the main reasons for reduced sign visibility is poor sign lighting. In addressing this issue, past research sponsored by the United States Sign Council Foundation demonstrated that internally illuminated on-premise signs have 40 to 60 percent greater visibility than externally illuminated signs in a controlled test track environment. Even so, an ever-increasing number of jurisdictions are implementing sign ordinances that prohibit the use of internally illuminated on-premise signs, mainly for aesthetic reasons. The objective of this research was to expand on the earlier test track research by evaluating the relative visibility of internally and externally illuminated signs on open roads in the real world. The results of this research clearly demonstrate the superiority of internally illuminated signs across a wide variety of driving conditions, sign offsets, sign sizes, shapes, colors, external lighting designs and quality levels.					
<b>17. Key Words</b> Internally illuminated, externally illuminated, sign, lighting design, visibility				<b>18. Distribution Statement</b> No restrictions. This document is available from the National Technical Information Service, Springfield, VA 22161	
<b>19. Security Classif. (of this report)</b>  Unclassified		<b>20. Security Classif. (of this page)</b>  Unclassified		<b>21. No. of Pages</b>  15	
				<b>22. Price</b>	

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## Background and Objectives

Poorly visible on-premise commercial signs have been associated with reduced safety, as drivers trying to locate and make sense of these signs may drive slower than the rest of traffic and perform erratic, last-second maneuvers (IESNA, 2001). One of the main reasons for reduced sign visibility is poor sign lighting (Garvey and Kuhn, 2004). In addressing this issue, past research sponsored by the United States Sign Council Foundation (USSCF) demonstrated that internally illuminated on-premise signs have 40 to 60 percent greater visibility than externally illuminated signs in a controlled test track environment (Garvey, et al., 2004). Even so, an ever-increasing number of jurisdictions are implementing sign ordinances that prohibit the use of internally illuminated on-premise signs, mainly for aesthetic reasons. The objective of this research was to expand on the earlier test track research by evaluating the relative visibility of internally and externally illuminated signs on open roads in the real world.

## Methodology

The study was an older-and-younger-driver, gender-balanced, human factors evaluation of the nighttime sign visibility and safety effects of commercial on-premise sign lighting design. The general methodology was an open field, or “real world,” study wherein a representative sample of the driving population was asked to find and read internally and externally illuminated signs on actual storefront properties while operating a vehicle on in-use roadways.

### **Variables**

The critical *independent variable* was on-premise sign lighting design (internal versus external illumination). Additional variables included driver age, gender, visual acuity, and driving speed.

The *dependent variable* (or measure of effectiveness) was a real-world combination of detection and legibility distance used effectively in earlier research (Zineddin, et al., 2005).

### ***Location***

The six signs were located on sections of US 26 and US 322 Business in State College, PA (Figure 1; A and D are the start and end points, B and C are the two furthest signs). At four of the six sign locations, both US 322 and US 26 are major arterials that are comprised of five-lane (one turn lane), two way cross sections with curbing. At two of the sign locations on Rt. 26 (Summit and Fine Line), the cross section drops to three-lanes (one turn lane), two way. The posted speed limit on the approach to the Animal Medical Hospital and Viet Thai Restaurant signs was 35 mph; the posted speed for the approaches to the remaining four signs was 45 mph.

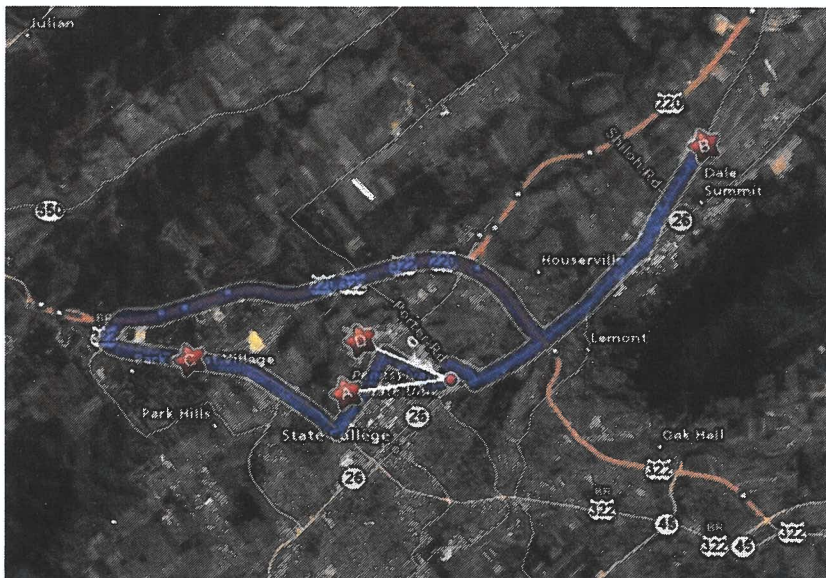


Figure 1. Test route.

### ***Externally Illuminated Signs***

With advice from the USSC, the researchers selected six existing, in use, externally illuminated signs for this study (Figure 2), narrowed down from a field of 25 candidate signs identified by the research team. In the previous research evaluating the relative readability of internally and externally illuminated signs, Garvey and his colleagues (2004) optimized external sign illumination with the use of clean, new, flood lamps aimed with precision at the signs, ensuring a high level of uniform illumination throughout the evaluation. The externally illuminated signs selected for the current study better reflect what drivers are exposed to in the real world in that they varied in lighting quality and brightness level from poor to excellent (Figure 3; Table 1).





Figure 2. Externally illuminated signs, daytime.



Figure 3. Externally illuminated signs, nighttime.



Table 1. Description of external lighting equipment and placement.

Sign	Distance of Lamps to Sign	Number of Lamps	Type of Bulb	Wattage of Bulb
Marrara's	5 ft	2	Halogen	300 W
Summit	4 ft	1	Mercury	100 W
Fine Line	3 ft	1	Metal Halide	50 W
Glantz Johnson	6.5 ft	1	Fluorescent Reflector Lamp	26 W
Animal Medical Hospital	8 ft	1	Halogen	100 W
Viet Thai	6 ft	1	Halogen	Unmarked bulb Between 100 and 200 W

### ***Internally Illuminated Signs***

A set of internally illuminated signs identical to the six existing, externally illuminated signs in copy (e.g., message, letter height, font, and spacing), sign shape, color, contrast orientation, and size were designed and fabricated by volunteer USSC members (Figures 4 and 5; See Appendix A for sign specification sheets). The nighttime lighting levels and design were based on sign industry standards that have been found to be optimal for these signs in earlier research (Garvey, et al., 2009).



Figure 4. Internally illuminated signs, daytime.



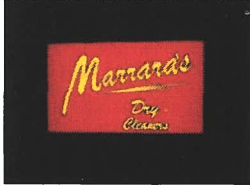







Figure 5. Internally illuminated signs, nighttime.

### Photometric Characteristics

The experimenters documented the luminance (brightness) of the internally and existing externally illuminated signs using a Minolta LS-110 luminance meter (Table 2) and techniques successfully developed in earlier research (Garvey, 2005; Garvey, et al., 2009).

Table 2. Nighttime sign luminance ( $\text{cd/m}^2$ )

Sign	Color	Internal Illumination	External Illumination
	Red	15	13
	Yellow	150	60
	White	700	15
	Green	60	1.0
	Gold (inlay letters)	80	10
	Green	30	0.5
	White	180	2.9
	Dark Blue	20	0.25
	Light Blue	130	1.25
	Gold (inlay letters)	130	1.5
	Brown	40	0.5
	Red	110	2.5
	Green	187	1.25
	Pink	260	5.0
	Yellow	325	8.0

Five of the signs fell within recommended levels to avoid glare effects for rural, suburban, and urban environmental lighting (i.e., Environmental Zones E2, E3, and E4) under both internal and external illumination, with the sixth (Summit Chiropractic Clinic) accommodating lighting zones E3 and E4 when internally illuminated and Zones E2, E3, and E4 when externally illuminated (Garvey, 2005).

### ***Subjects***

A total of 80 subjects participated in the research. Forty viewed the internally illuminated signs and forty viewed the externally illuminated signs. Half of the subjects that viewed each lighting condition were female and half were male. All subjects had valid U.S. driver's licenses. The subjects were selected to represent the U.S. driving population in age (Table 3). The subjects' binocular, static, distance visual acuity was measured using a Sloan letter chart displayed on a Good-Light Company light box. The mean visual acuity for the subjects who viewed the internally illuminated signs was 20/20 and the mean visual acuity for those who saw the externally illuminated signs was 20/19.

Table 3. Subject age group and visual acuity data.

Age Group	Percent of U.S. Driving Population	Number of subjects (half viewed internally illuminated sign and half internally)	Mean Visual Acuity
18-29	20.1%	n=16	20/19
30-44	28.4%	n=24	20/18
45-59	28.4%	n=24	20/20
60+	21.2%	n=16	20/23

### ***Procedure***

All eighty subjects drove a 2004 Dodge Stratus sedan along a half-hour route through State College commercial districts at night. The subjects were accompanied by an experimenter in the passenger seat and one in the rear seat. The vehicle was instrumented with a Nu-Metrics distance measuring instrument (DMI) to record sign visibility distances.

The subjects were given simple route directions to follow and were instructed to drive “as they normally would” while emphasizing safety and maintaining the posted speed. To simulate the common experience drivers have when they know what business establishment they are looking for, but do not know its location, the subjects were told the name of the establishment and were asked to read the sign aloud as soon as they could. The moment the subjects read the signs correctly, the experimenter in the passenger seat pressed a button on the DMI. The button was pressed a second time when the vehicle was alongside the signs. The DMI calculated the distance between the two button presses and recorded the result as the visibility distance for that condition.

The internally illuminated signs were placed in front of and blocking the externally illuminated signs while the first half of the subjects participated. The internally illuminated signs were then removed and the second half of the subjects viewed the externally illuminated signs using the same procedures.

## **Analyses and Results**

### ***Gender and Age***

Forty males and 40 females participated in the study. On average, the males read the signs at 233 ft and the females at 225 ft. An analysis of variance (ANOVA) was conducted and, not surprisingly, this was not a statistically significant difference ( $F=0.28$ ;  $p = .60$ ). Another ANOVA showed that there was also no statistically significant age group effect ( $F=1.58$ ;  $p=.20$ ), with the youngest age group reading the signs at, on average, 213 ft, the two middle groups at 249 and 236 ft, and the oldest group at 202 ft.

### ***Visual Acuity, Familiarity, Weather***

Three separate ANOVAs were conducted on these variables. There were no statistically significant effects as a function of subject static visual acuity ( $F=1.72$ ;  $p=.16$ ). Although visual acuity is often found to be a good predictor of sign legibility, this was not the case for the small range in visual acuity combined with the complex task of finding and reading signs in the real world while driving in live traffic at night.

A portion of the subjects were from the local State College area and knew the location of some of the business establishments where the six test signs were mounted. The statistical analysis showed slight improvement (254 ft versus 221 ft) in the distance at which the signs were found and read as a function of sign familiarity ( $F=4.55$ ;  $p=.04$ ).

Some of the data were collected during light rain or light snow, or when the roads were wet. An analysis of the data showed that this did not significantly affect sign detection and reading distances ( $F=0.59$ ;  $p=.63$ ).

### **Speed**

Two separate statistical analyses were conducted on the two lighting conditions to determine whether there was a significant correlation between speed and sign reading distance in this study. The hypothesis was that when drivers have difficulty reading a sign, they will slow down, which presents potential traffic safety concerns. While the  $R^2$  values were small (hovering around .10), they were statistically significant ( $t=4.93$ ;  $p<.0001$  for externally illuminated signs and  $t=4.83$ ;  $p<.0001$  for internally illuminated signs), revealing that the drivers in this study did indeed drive more slowly around less visible signs (Figure 6).

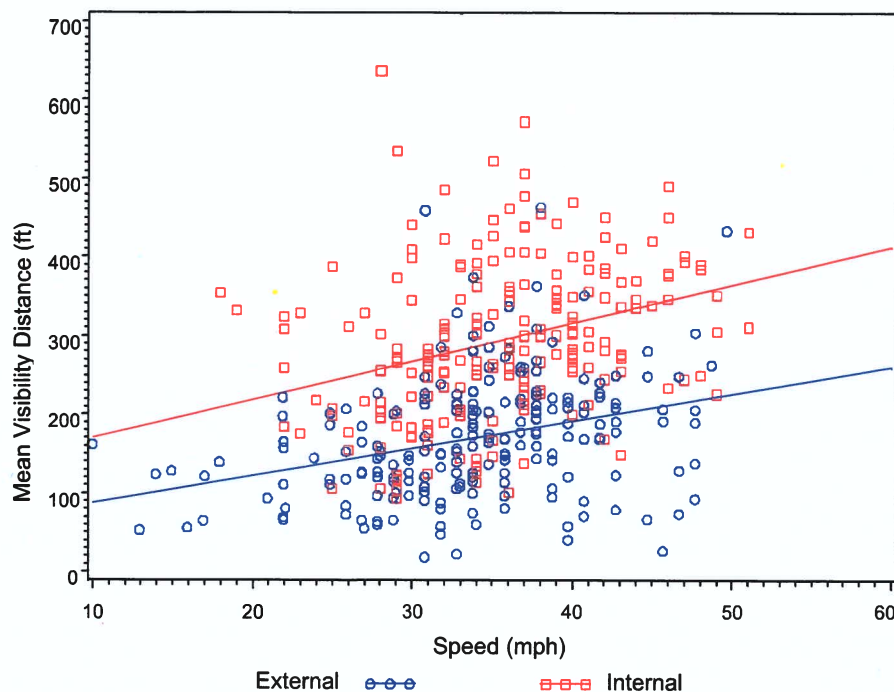


Figure 6. Scatterplot of sign visibility distance in feet by speed in mph.

## Sign

Sign visibility differed across the six signs (Figure 7, the numbers in the bars indicate the number of subjects who drove past the sign without ever seeing it). The average reading distances of the six signs varied due to differences in: location, including placement on the left (Summit) or right side of the road (all the others); lateral and vertical sign offset; roadway characteristics (e.g., number of lanes of traffic and curvature); and characteristics of the signs themselves, perhaps most importantly size, color, and shape.

The statistical Glimmix Procedure was used to determine which of the signs were significantly affected by lighting design. The result was that all of the signs performed statistically significantly better with internal illumination. The biggest improvement was with the Animal Medical Hospital sign, which was read on average 2.36 times further away with internal illumination. This was a 196-ft mean difference, giving drivers almost 4 extra seconds at 35 mph. Furthermore, this sign was completely missed by two drivers when it was externally illuminated. Even the most modest increase (Marrara's Dry Cleaner) resulted in almost 1.35 extra seconds of driver reaction time and this was a sign that was maximally externally illuminated with two 300 watt halogen lamps.

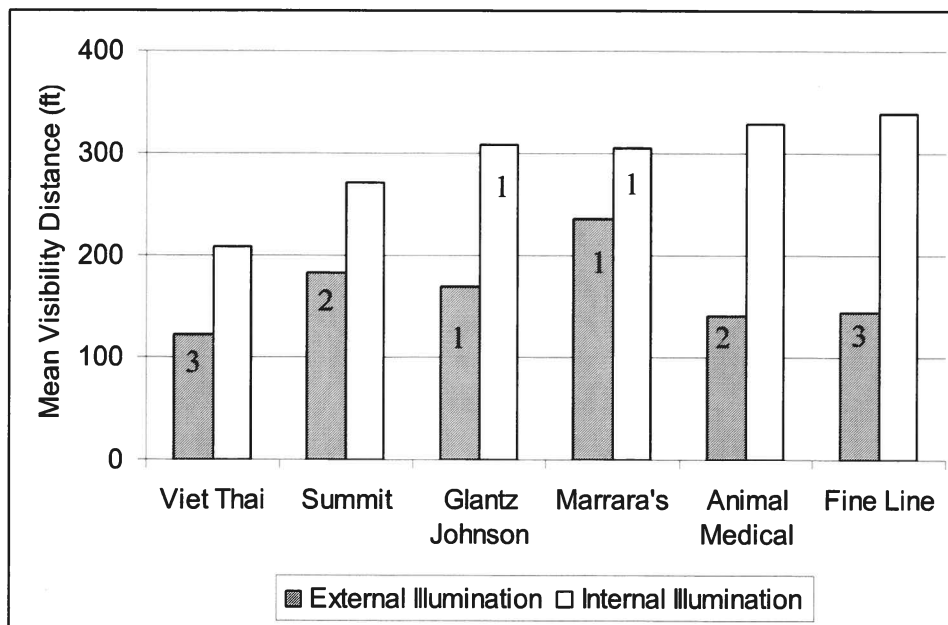


Figure 7. Effect of illumination type on individual sign visibility.



### ***Internal versus External Illumination***

The Tukey-Kramer statistical test was used to evaluate the combined visibility of all six signs tested. The test showed a statistically significant improvement in sign visibility when internally illuminated ( $t=-10.19$ ;  $p<.0001$ ). Overall, the internally illuminated signs were visible on average 68 percent further away than the externally illuminated signs (291 versus 173 feet; Figure 8). This is a 118-foot difference, which at 35 mph means that drivers have an additional 2.3 seconds to read and react to the externally illuminated signs (1.8 seconds at 45 mph).

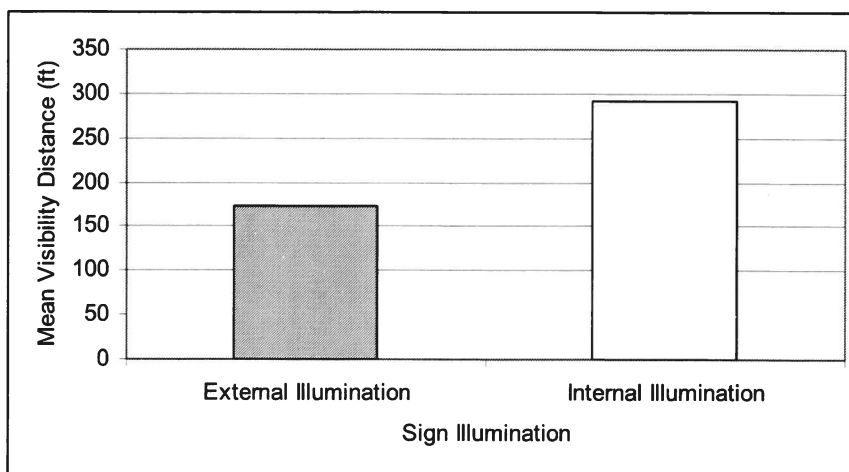


Figure 8. Effect of illumination type on overall sign visibility.

## **Conclusions**

The primary objective of this research project was to conduct a one-to-one comparison between internally and externally illuminated, on-premise signs on open roadways, using real drivers, and actual in-use signs. To fairly evaluate the differences in nighttime visibility between signs that are internally illuminated and signs that are externally illuminated, the signs must be identical in all aspects other than lighting design. This was accomplished by fabricating exact internally illuminated replicas of the existing externally illuminated signs and placing them in front of the existing signs, so that not just the signs, but the locations and offsets (and therefore the visual surround and roadway characteristics) were identical.

The results of this research clearly demonstrate the superiority of internally illuminated signs across a wide variety of driving conditions, sign offsets, sign sizes, shapes, colors, and external lighting designs and quality levels. The overwhelmingly positive response from the participating establishments and their patrons, as well as the visual evidence from Figures 2-5, also demonstrate the fallacy that internally illuminated signs are inherently less esthetically pleasing than externally illuminated signs.

Furthermore, internal sign illumination avoids some of the intractable problems with external illumination, illustrated in Figure 3, such as: difficulty in maintaining the directionality of the light source over time, which often results in non-uniform light distribution (e.g., Viet Thai); “hot spots,” especially on metallic inlay signs (e.g., Fine Line Homes, where the luminance on the house reached over 3,000 cd/m<sup>2</sup>); and light trespass, both onto other properties and into the eyes of oncoming drivers (e.g., Marrara’s and Glantz, Johnson).

Although on-premise signs are a critical wayfinding device for drivers, poorly visible on-premise signs negatively impact road user safety by causing drivers to slow down in traffic (demonstrated in this research) or make erratic maneuvers. Internally illuminated on-premise signs have been shown to significantly increase the distance at which these signs can be read over externally illuminated signs. This was first demonstrated in a test track study where 40 to 60 percent improvements were found. The present study showed that even greater improvements (almost 70 percent on average and 240 percent in the best case) can be made when actual in-use, externally illuminated signs are upgraded to ones that use internal illumination.

In this study, internally illuminated signs gave drivers on average about 2 seconds (and in extreme cases almost 4 seconds) more time than externally illuminated signs to read the signs and maneuver their vehicles (known as Viewer Reaction Time or VRT), which could transfer to a tremendous safety benefit.

Another way to look at it is that to get the same VRT for an externally illuminated sign that you get with an internally illuminated sign of exactly the same size, design, color, placement, etc., the driving speed would need to be reduced by approximately 40 percent. For example, to equal the VRT of an internally illuminated sign at 25 mph, a driver would need to approach an externally illuminated sign at about 15 mph (see Table 4 for more examples).

Table 4. The reduction in speed of a driver approaching externally illuminated signs needed to achieve the VRT of an internally illuminated sign.

Internally Illuminated	Externally Illuminated
15 mph	10 mph
25 mph	15 mph
35 mph	20 mph
45 mph	25 mph
55 mph	30 mph
65 mph	40 mph

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## **APPENDIX A**

### **Internally Illuminated Sign Specification Sheets**

## Rise Vision Blog

Product News, Customer Stories and Updates from Rise Vision

### Digital Signage in Education: 5 Reasons to Invest

January 22 2017



Over the past decade, digital signage has completely changed the way schools and educational institutions interact with their students, staff, and visitors. It's introduced a new and exciting way for schools and colleges to reach their audience with engaging and targeted messages that actually get noticed.

Digital signage is likely not going anywhere anytime soon, and if you haven't already implemented it as a part of your communications strategy, you're falling behind.

### What is Digital Signage?

**"Digital signage is the most effective tool that you will use to communicate with your audience."**

Digital signage is the ability to show any type of media on a digital display. Digital signage is everywhere - the mall, restaurants, hospitals, universities, and lobbies. It's a great tool for marketing a new product, promoting brand awareness, communicating with staff or students and engaging just about any audience in your space.

Digital signage helps an organization communicate their goals, messages, and promotions in a way that is helpful to the target audience. It's actually quite a nice way to introduce people to your brand or organization and to move on from outdated methods such as white boards, bulletin boards and flyers (which are likely not being noticed anyways).

## What are the benefits of digital signage in an educational environment?

There are countless reasons that a school, college, or university may decide to ditch the paper and use digital signage as part of their strategy. Here are the top benefits that come with implementing a digital signage project in an educational setting.

### **1) Improved communication**

School administrators have to reach hundreds, or even thousands of pupils on a daily basis, and digital signage is the only effective method of doing so. Unlike static signs that often blend into the walls, educational institutions can tap into the dynamic world of digital signage by creating content that's colorful and captivating, and will hold their younger audiences' attention.

As digital natives, students have come to expect digital forms of communication, and since they spend the majority of their time at school, it pays off to communicate with them in a way that's meaningful to them. By providing valuable and timely content to students, administrators can cut through the clutter and improve lines of communication with their students.

As long as you have the right content [design](#) and placement, both your staff and students will easily understand your messages and feel more connected as a community.

## **2) Campus safety**

Providing a safe and secure environment in which to study and work in is a top priority for any school or educational institution. Digital signage can easily be integrated with an [emergency alert system](#) that immediately communicates emergencies such as weather conditions and school closings. Digital signs can also communicate emergency contact information, emergency plans and safety guides, campus maps, and real time messages about what students should do in a certain situation.

When paired with emergency alerts, digital signage allows schools to take an active role in promoting a safe campus, and is an efficient method to access campus safety resources, giving you peace of mind that you've taken the steps to create a secure campus environment.

## **3) Increased event attendance**

Universities and schools are always buzzing with events, and digital signage is a powerful medium to promote these [events](#) and provide your audience with useful and timely information they need. From job fairs, to formals, graduations, sports events, concerts, charity functions and other activities, you can use your digital signage to keep students updated and in the loop.

You can also integrate your [social media](#) with your digital signage to let students stay in touch with photos and other updates from events. This will do a much better job of drawing attention to campus activities than what's possible with a static sign.

## **4) Cost effective**

Besides the obvious savings in paper, printing, and distribution, digital signage in schools can also help to drive sales for school events and raise money. By increasing awareness of school events, digital signage can increase ticket sales for sporting and charity events. [Donor walls](#) can also be used to encourage alumni and parents to donate money.

## 5) Real time updates

With the ability to schedule and update messaging in real time, digital signage is perfect for providing your audience with useful information. Whether its weather or traffic conditions, building closures, planned construction or bus route interruptions, digital signage is a *\*powerful\** way to get these messages across in a timely manner.

When it comes to campus communication, digital signage is the clear winner. As the most efficient method of spreading a message and streamlining communication, digital signage is essential to any school, college, or university.

### How can I use digital signage at my school?

Digital signage allows you to centralize your communication in one place. Whether you chose to show daily lunch menus, student photos, or your morning announcements, you can effectively reach your students and get your message across.

Other ideas of content that you can show include:

- Student projects
- Birthdays, graduations, dances, etc.
- After school activity schedules
- Welcome message to visitors and parents
- Wayfinding around campus
- Exam dates
- Sports and fundraising events
- New staff members
- Scholarships/bursaries
- Emergency alerts and instructions
- Campus maps

**You might also like:** [101 Content Ideas for Your Digital Signage](#)



## What's the best location for my digital signage?

The areas with the highest traffic often result in the best locations for installing digital signage. You will get the most from your investment if you showcase your announcements and updates in common areas, lobbies, or hallways where students walk and hang out.

As a rule of thumb, it is best to position your digital signage at eye-height as this is where it's most likely to be seen and interacted with. While 'eye-height' varies depending on the height of your audience, you can roughly estimate the average height of your audience and use this estimate to mount your displays accordingly.

*[Read Next: The Best Location for Your Digital Signage](#)*

## Digital Signage in Schools

Today's schools are filled with tech-savvy students and teachers, which makes digital signage a natural fit as a mainstay of their communications strategy. Digital signage gives administrators the ability to create messages and remotely control them to an unlimited number of displays, while also having the ability to update messages in real time.

Schools like [Texas State University](#), [Wayne State University](#), and the [University of Tampa](#) are already using Rise Vision to power their digital signage and to connect with their students in an effective way.

**Get in touch with us to see how we can help you do the same!**

**Get Your Message Noticed.**

**SIGN UP NOW**

Tweet

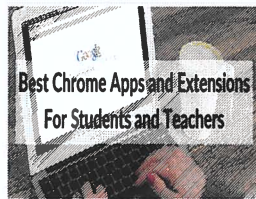
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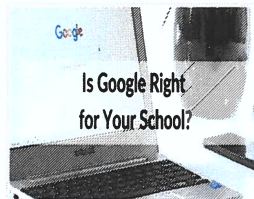
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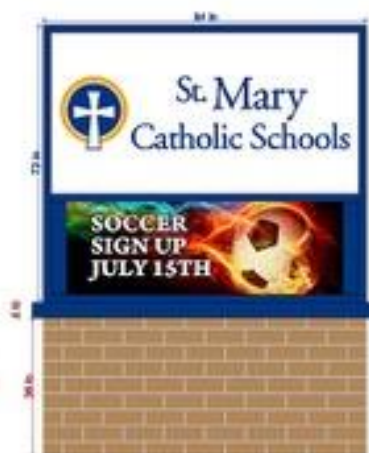
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**Cabinet & EMC DISPLAY - \$16,385**  
**Installation - \$750.00**

Concrete and Masonry for Base - \$5975.00

Hard Coated Foam Base - \$4079.00

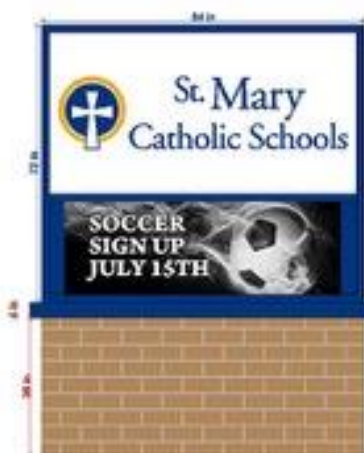


Lighted Cabinet with  
9 mm Pitch EMC - Full Color

**Cabinet & EMC DISPLAY - \$13,485**  
**Installation - \$750.00**

Concrete and Masonry for Base - \$5975.00

Hard Coated Foam Base - \$4079.00



Lighted Cabinet with  
15 mm Pitch EMC - Single Color(white)

**Cabinet - \$6,820**  
**Installation - \$750.00**

Concrete and Masonry for Base - \$5975.00

Hard Coated Foam Base - \$4079.00



Lighted Cabinet with  
4 line changeable letter board  
Includes 6" Letter set



To: Board of Appeals

From: Kristi Heim, Community Development Coordinator

Date: October 12, 2018

RE: **Variance Request for St. Mary Elementary School, 540 Second Street**

**OVERVIEW**

**Property Address:** 540 Second Street

**Property Owner:** St. Mary Congregation, 212 Appleton Street, Menasha

**Applicant:** St. Mary Elementary, 540 Second Street, Menasha.

**Property Zoning:** R-1 – Single Family Residence District, permitted as a Special Use.

***Surrounding Zoning:***

North: R-1 – Single Family Residence District; R-2 – Two-Family Residence District; C-1 General Commercial District

South: R-1 – Single Family Residence District; R-2 – Two-Family Residence District; R-3 – Multi-Family, Medium Density; Residence District.

East: R-1 – Single Family Residence District; R-2 – Two-Family Residence District

West: R-1 – Single Family Residence District

In total there are eleven (11) parcels zoned R-1, three (3) parcels zoned R-2, one (1) parcel zoned R-3, and one (1) parcel zoned C-1.

**Variance Requested:** Section 13-1-67(d)(1) of the City of Menasha Code of ordinances states, in part, “Electronic message centers are permitted in the C-1, C-3, C-4, I-1, and I-2 districts.” The applicant is requesting allowance for an electronic message center as part of a new monument sign within the R-1 Single Family Residence District.

**Reason for Variance:** To allow St. Mary Elementary to incorporate an electronic message center (EMC) to a proposed new monument sign (see attached site plan) within a property zoned R-1

## **REGULATIONS FOR GRANTING A VARIANCE**

Per Section 13-1-153(d), the Board of Appeals must find the following five items to be true prior to granting a variance:

- 1) Hardship to the Property Owner due to Physiographical Considerations
- 2) Unique Property Conditions
- 3) Not an Exclusive Desire to Increase Property Value or Income
- 4) Will not be Detrimental to the Neighborhood
- 5) Will not Undermine the Spirit of the Zoning Code

## **ANALYSIS OF VARIANCE REQUEST**

Below is staff's analysis of each of the five required items per Section 13-1-153(d) as they pertain to the variance requested by St. Mary Elementary.

### ***1. Hardship to the Property Owner due to Physiographical Considerations***

*SEC 13-1-153(D)1: "Denial of variation may result in hardship to the property owner due to physiographical consideration. There must be exceptional, extraordinary or unusual circumstances or conditions applying to the lot or parcel, structure, use or intended use that do not apply generally to other properties or uses in the same district and the granting of the variance would not be of so general or recurrent nature as to suggest that the Zoning Code should be changed."*

ANALYSIS: St. Mary Elementary is part of the St. Mary Congregation campus. Current signage for the school is a legal-nonconforming pole sign located at the northwest corner of the property. The applicant has proposed removal of this sign and installation of a monument sign, which incorporates an electronic message sign on the northern (Third Street frontage) portion of the property.

The St. Mary Congregation campus is zoned R-1, Single Family Residence District. Churches are permitted as a special use within the R-1 District. The Zoning Ordinance allows monument signs for special uses within the R-1 District; however electronic message centers are not allowed within that district. All other aspects of the sign request meet Zoning Ordinance standards including size, height, setbacks, and materials.

Absent a variance, the applicant has the ability to erect an externally illuminated monument sign. The Zoning Ordinance allows signage by right that the property owner could install as well as the ability to illuminate such signage. Based on

this, it is staff's opinion a hardship, as defined, is unfounded because the property owner is able to enjoy the same substantial property rights as others in the same district.

## **2. Unique Property Conditions**

*SEC 13-1-153(D)2: The conditions upon which a petition for a variation is based are unique to the property for which variation is being sought and that such variance is necessary for the preservation and enjoyment of substantial property rights possessed by other properties in the same district and same vicinity.*

ANALYSIS: The property can be described as a campus for St. Mary Congregation which includes St. Mary Church as well as St. Mary Elementary. It can be argued that unique property conditions exist with multiple buildings and uses existing on a single parcel. It is staff's opinion that even with the uniqueness of this property, the conditions themselves do not diminish the property rights possessed by other properties in the same district and same vicinity.

## **3. Not an Exclusive Desire to Increase Property Value or Income**

*SEC 13-1-153(D)3: The purpose of the variation is not based exclusively upon a desire to increase the value or income potential of the property.*

ANALYSIS: Per the applicants response (attached), the primary reason for requesting the variance is to provide services to the community. The applicant is a non-profit school and would gain no financial incentive to install the sign as proposed.

## **4. Will Not be Detrimental to the Neighborhood**

*SEC 13-1-153(D)4: The granting of the variation will not be detrimental to the public welfare or injurious to the other property or improvements in the neighborhood in which the property is located.*

ANALYSIS: The Zoning Ordinance does not allow incorporation of electronic messages centers as part of signs within residential districts in order to provide a pleasing aesthetic environment for residents. Electronic message center inserts may also distract pedestrian and vehicular traffic. It may be found that allowing an electronic message center monument sign at this property may have a negative impact to the surrounding properties.

**5. Will not Undermine the Spirit of the Zoning Code**

*SEC 13-1-153(D)5: The proposed variation will not undermine the spirit and general and specific purposes of the Zoning Code.*

ANALYSIS: Within the city, fourteen (14) churches and fifteen (15) schools are located throughout our community, many of them located within residential neighborhoods. The granting of this variance may set a precedent to allow other special uses including churches, schools, civic institutions and the like, within the R-1 Single Family Residence District to apply for variances for electronic message centers.

**STAFF RECOMMENDATION**

**Staff recommends the variance, as requested, be denied by the Board of Appeals.** Per the analysis presented above, staff deems that the requirements for granting a variance have not been satisfied.

