PROCEEDINGS OF THE BROWN COUNTY
PLANNING, DEVELOPMENT & TRANSPORTATION COMMITTEE

Pursuant to Section 19.84 Wis. Stats., a regular meeting of the **Brown County Planning, Development & Transportation Committee** was held on Monday, July 23, 2018 in Room 200, 305 E. Walnut St., Green Bay, WI

Present: Chair Erickson, Supervisor Kaster, Supervisor Dantinne, Supervisor Tran, Supervisor Deslauriers
Also Present: Supervisor Brusky, Public Works Director Paul Fontecchio, Officer Sandberg, Engineering Manager Nick Uitenbroek, Airport Director Marty Piette, UW-Extension Director Judy Knudsen, Planning Director Chuck Lamine, Director of Administration Chad Weininger and other interested parties.

I. **Call Meeting to Order.**

The meeting was called to order by Chair Bernie Erickson at 6:24 pm.

II. **Approve/Modify Agenda.**

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to take Item 18 after Item 2. Vote taken. MOTION CARRIED UNANIMOUSLY

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to approve as amended. Vote taken. MOTION CARRIED UNANIMOUSLY

III. **Approve/Modify Minutes of June 4 and 25, 2018.**

Motion made by Supervisor Kaster, seconded by Supervisor Dantinne to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

Comments from the Public None.

1. Review Minutes of: None.

Presentation

2. Report on County Highway Intersection Safety & Stop Condition Rumble Strips.

Fontecchio informed they had seen a lot of fatal accidents in Brown County over the last few years, things in common were broad daylight, T-intersections of county trunks, stop signs and stop ahead signs were all in place. There was a problem with distracted driving, people weren't seeing the signs. They could, and in most cases they will, put up another stop sign on the left but if people weren't seeing two signs, they may not see a third. Over the last 10-15 years they saw stop control (transverse) rumble strips go away. The reasoning was noise to adjacent landowners. At the same time you see them being used more on the shoulders and center lines of highways. They needed to reexamine the use of the stop control rumble strips. As indicated in the report, the U.S. Department of Transportation Federal Highway Administration's (FHWA) studied the effectiveness of transverse rumble strips on approaches to stop-controlled intersections in rural areas. They found a "statistically significant reduction in KAB crashes (about 21 percent) and KA crashes (about 39 percent)." ('K' represents fatal crashes, 'A' represents incapacitating injury crashes, and 'B' represents non-incapacitating injury crashes.). Fontecchio stated they knew they worked and were proposing to reuse them. At the September meeting, they will bring their consultant expert in for the county road safety plan. She will weave in stop controlled rumble strips into the methods to help make county highways safer. There were a few intersections because of fatalities or near-misses that they will put rumble strips in and some will get extra signage. Next spring he'd like to put together a more robust package where they bid out some millings for stop control rumble strips to give towns the opportunity to piggyback on the contract.

Officer Sandberg informed he was the Chair Person for the Brown County Traffic Safety Commission; they met quarterly

required by law. They reviewed fatal crashes and very serious injury crashes that occurred over the last quarter and come up with different things such as engineering, education or enforcement to try to solve issues they were having. From the Traffic Safety Commission, they wanted to look at every single measure possible to keep people safe in the community. From 2015-2018 there were 14,579 total crashes in the county; distracted driving was a factor for 2,726 of those, which was almost 20% of the crashes. To compare, same timeframe 828 crashes were alcohol or drug related. There were 68 total deaths, 15 of those were from 12 crashes that were intersection related where someone failed to stop at a stop sign; this was only counting the rural intersections. They needed solutions and this was one of few options. Responding to Tran, it doesn't break it down to cellphone related. Most people won't admit it and it was hard to prove.

Kaster questioned what constituted putting a 4-way stop in. Fontecchio felt that was one thing they had to look at but it was mostly based on traffic volume. He had not gone through and analyzed every intersection but it was something they should be analyzing. Kaster expressed concerns with the noise from rumble strips. Fontecchio knew they could be looked at as a nuisance but it was the sound of potentially lives being saved.

A brief discussion ensued with regard to when speedbumps were appropriate.

Fontecchio informed that three sets of rumble strips were the standard; the standard detailed drawing the State of Wisconsin had. He was very hesitant to deviate from the standard detailed drawings set for by the DOT; he felt they incurred quite a bit of liability if they did.

Deslauriers informed the intersections he was focused on were the ones that caused the double fatality and the one by Holland Town Hall. He questioned the process after the consultant comes back in regard to the decision-making as to what counter measures were installed at what intersection. What involvement did local community have as well as town and resident involvement look like? Fontecchio informed he didn't design roads based on public opinion, he had this conversation at many informational meetings. As an Engineer they engineer the roads and look at things analytically from an engineering perspective. In 2015, he took the advice of local government and wished he hadn't the day after the fatal accident on G and Z. There were times they put in roundabouts where people on the 4-corners weren't happy and he had to tell them they had to weigh their 4-landowner issues and concerns verses the 10,000 people that went through that intersection every day.

Deslauriers stated he had responded to accidents 60 square miles plus in southern Brown County for the last 15 years and wanted to make sure that the process insured that intersections were safe. Everything in highway safety was a balance and they had to balance landowners and the low hanging fruit that existed. Handouts re: Unsignalized Intersection Safety Strategies (attached) were passed out. He provided examples specifically at this intersection that yielded the similar crash reduction factors as rumble strips with no or very little resident impacts. Deslauriers believed the rumble strips shown in the pictures gave a huge impact to the landowners to the point of very deep sleep disturbance; it was not pleasant living there. He didn't understand why the rumble strips were removed by the park and believed it was their responsibility to go through and look at some of the counter measures available at that corner. Overhead stop signs, beacons, flashing LED stop signs, pavement paintings as well as increased enforcement were some examples available. The reason he was asking for town involvement was there were things that the townspeople knew due to familiarity and he felt future actions had to involve the towns.

Fontecchio noted the last page of Deslauriers handout was from a county roadway safety plan; so much of the low hanging fruit talked about was exactly what was coming back into the county road safety plan. There was a lot of stuff they weren't doing hence why it was put in the budget plan last year. Fontecchio saw some of the analytics from the consultant firm, it was very robust. He was just saying let's not take a certain tool out of the toolbox as he respectfully disagreed with a number of Deslauriers points related to rumble strips. The Highway Department put together reports by talking to law enforcement and other professional engineers. The County Board was the policy making body and could decide not to use rumble strips but it would be in direct countermand to what he was recommending as the Highway Commissioner and a professional engineer. He can't in good conscience leave any tools out of the toolbox and he wasn't interested in having a policy discussion of public opinion. Deslauriers responded that's not what he wanted; there were very appropriate locations for stop condition rumble strips. He wasn't taking a black and white approach to this but saying let's use the tools in the toolbox and exhaust the other options when there was a dramatic impact to people and families. He reiterated they could get the same effectiveness without rumble strips at particular intersections. He was really troubled by county activities that don't openly communicate, ask for input of decisions that will dramatically impact townships that were there and their residents. Fontecchio had listened and respected the towns and had gone above and

beyond. He provided options that local government could choose. The thing he wanted to address was he had seen where they had lowered speed limits and raised them back up. There were certain safety things that on a personal level bothered him because he knew it shouldn't be done and yet they had done it. Public opinion was fickle.

Motion made by Supervisor Kaster, seconded by Supervisor Dantinne to open the floor to allow interested parties to speak. Vote taken. MOTION CARRIED UNANIMOUSLY

Bruce Krahn - 3899 Park Rd., Town of Morrison
Krahn's resident was the first place to the east of the intersection. He had lived there for 45 years and had seen it go from a small country road to the busiest road in their town; it led directly down I43. It was probably the 2nd busiest intersection in their town. Something had to be done to make that intersection safer. When the rumble strips were in there, it didn't bother them a bit and he questioned why they took them out, it just made that intersection more dangerous. Approaching from the east you had a blind intersection and you can't see if someone was coming through on G. Maybe they needed a 4-way stop. The last accident took two lives. The accident before that, a guy was coming from the east, didn't stop for the stop sign and hit someone on G.

Jenny Wasmuth - 4591 Deer Rd., Town of Morrison Supervisor
Wasmuth informed she lived through the 1987 fatal accident. The car was traveling to the east, that's why they put rumble strips there in approx. 1988. Laabs and Wasmuth were not on the board when the decision was made to take them out. Their first town supervisor's meeting was when the chairman discussed going to the county to take them out, in which they were not in favor of. She didn't know of any fatalities prior or complaints from the noise. She doesn't live near them so she couldn't speak to the noise but from 1988-2010 there were no complaints about the noise. Regardless of rumble strips, locals don't stop. Heavy equipment rolls through stop signs. Rumble strips helped people glancing over especially traveling west as it was all trees and brush.

Stan Kaczmarek – 3848 Anston Rd., Town of Pittsfield
Speaking to a comment about Heritage Rd. and CTH X, before the roundabout went in they had rumble strips. He frequented that intersection and yes, they were noisy but you got used to it. There were accidents but no fatalities. One thing they could consider was adding a roundabout; it will slow the traffic in each direction.

Dennis Laabs – 7597 Hwy W, Greenleaf, Town of Morrison Supervisor
Laabs talked to the resident to the east, he said regardless of whether the rumble strips were in or out, they were still running that stop sign on a constant basis. Laabs felt there was a signage problem or something wrong there that needed to be changed and addressed. The resident didn't want the rumble strips back because of the noise. Laabs had a couple other intersections of concern, there was a young girl killed at D and ManCal and nothing was ever done. ManCal and CTH W was another bad intersection, people were running stop signs and there were no stop ahead signs. Fontecchio informed those would be the town's responsibility.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to return to regular order of business. Vote taken. MOTION CARRIED UNANIMOUSLY

Erickson gave several examples where people totally disregard stop signs and painted arrows in a 25 mph zone. You cannot convince people from running stop signs or with signs in general. It was a lose lose. He felt they should have rumble strips in the section of the right turn only lane to make people aware.

Tran questioned if there were any studies or data on the reduction of accidents with roundabouts? Sandberg responded, as of January 2, all their data had been added to a website Community Maps – Wisconsin County TSC Crash Mapping. He didn't have the exact data but knew roundabouts definitely dropped down numbers specifically for Brown County. One thing he and the DOT believed roundabouts were helping, were wrong way drivers on the highway. Fontecchio stated you see an uptick in minor fender-benders in roundabouts but serious injury/fatals were way down. The only trouble was they were expensive, it was a cost factor.

Further discussions ensued at this time, with several comments and concerns being reiterated. Fontecchio felt he had underreacted in the past and felt he needed to be tougher on safety as a Highway Commissioner and wanted the roads to be safer.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

Item 18 was taken at this time

Communications – None.

UW-Extension

3. Budget Financial Status Report for June 2018 – Unaudited.

UW Extension Family Living Educator/Dept. Head Judy Knudsen informed they were pretty much on target for the year.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

4. Budget Adjustment Request (18-83): Any increase in expenses with an offsetting increase in revenue.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

5. Director's Report.

Knudsen provided a brochure to the Brown County Fair and reported on the following:

- The Brown County Fair Association and the Brown County Dairy Promotion Committee was working with the Neville Public Museum to have an event on August 1st at the museum; handout provided with more information.
- Master Gardeners were busy landscaping at the museum as their give-back for UW-Extension being housed there.
- They were getting inundated with emails and calls about Japanese beetles; this was year 7 of 10 and the population will drop.
- Lots of summer programming for youth such as robotics camp and programming for the GB area public schools.
- Planting for a Purpose – if you have extra produce, please share with the food pantries.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

Airport

6. Airport 2019 Capital Project 5-Year Outlook Summary.

Airport Director Marty Piette briefly ran through the 12 airport projects for 2019 listed on the outlook summary.

Motion made by Supervisor Dantinne, seconded by Supervisor Deslauriers to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

7. Budget Status Financial Report for June 2018 – Unaudited.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

8. Departmental Opening Summary.

Motion made by Supervisor Deslauriers, seconded by Supervisor Dantinne to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

9. Director's Report.

Piette reported on the following:

- Rental car concessionaire agreements expire at the end of the calendar year. They were in the process of rebidding.

- Passenger traffic continued to see an upward swing for June, up 11.2% compared to June 2017.
- EAA AirVenture began today. They were seeing quite a bit of traffic this year, unlike last year or the year before. Over Saturday, Sunday and Monday they saw over 100 aircraft into the airport, coming through or staying. They will see all the aircraft that came in leaving and a new group of pilots coming in.
- The airport hosted 'Pulling Together for a Cure' event put on by Delta and the American Cancer Society. They had a decent turnout with a couple rain showers. They saw 400-500 people at the airport and raised almost $50,000 for cancer research.
- The airport will be at Packer's training camp with the firetruck and handing out goodies.

- **12-Hour Shift Report.**

Motion made by Supervisor Dantinne, seconded by Supervisor Deslauriers to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

Port & Resource Recovery

10. Port & Resource Recovery 2019 Capital Project 5-Year Outlook Summary.

Port & Resource Recovery Business Development Manager Mark Walter briefly spoke to the projects for 2019.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

11. 2nd Qtr Budget Status Report – Port.

Motion made by Supervisor Kaster, seconded by Supervisor Tran to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

12. 2nd Qtr Budget Status Report – Resource Recovery.

Motion made by Supervisor Kaster, seconded by Supervisor Dantinne to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

13. Strategic Public Communications Plan Project #2251 RFP - Request for Approval.

Walters briefly provided background and explained that they were requesting proposals for a Strategic Public Communications Plan for both its Port of Green Bay and its Resource Recovery operations.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to approve Project #2251 RFP. Vote taken. MOTION CARRIED UNANIMOUSLY

14. Director's Report.

Walters reported on the following:

- They were finishing up a modification on their Bay Port Plan of Operations with the Department of Natural Resources, looking at additional environmental sampling and final cover work as needed going forward. If at some point Bay Port got full they would have to close it like any other type of landfill.
- They had fully leased a piece of property the Port owned on Bilsby Avenue but there was still some site work that needed to be done.
- The county was still working on negotiation land lease between Brown County and BC Organics in the Town of Holland.
- They hired a company out of Ohio to do some work on profiling dredge material to find out if there was a way to reuse it and they believe the county's dredge material had potential as top soil, something they could sell. This would allow them to take dredge material out of Bay Port and extend the life of Bay Port. The problem was the WIDNR had no basis of comparison for what topsoil was compared to what dredge material was.
- The board approved an RFP for an end use plan for Renard Island; they received five responses back, went through an interview process and selected a consultant. They were in the process of negotiating a contract and should have

something started in August. There was a hold on all federal funds so the grant agreements were still in the holding pattern at the state and may not have a signed contract for that grant until the end of August.

- South Landfill Plan of Operation was underway and will be done Jan 2019; it was estimated to cost $300,000 to finish, get it approved and move forward.
- They were doing some South Landfill Baseline Monitoring. Deslauriers expressed concerns and asked that communication go out to landowners. Walters informed it was very low trace levels and they were waiting for results of the second set of testing on it, essentially a contact type of contamination level not at a level you'd expect in the wells. Deslauriers would like to be kept in the loop and updated on the results. Dantinne was concerned with sending out information prior to getting the results, scaring residents.
- TS Second Scale and Kiosk Options – They were looking to add a second transfer station scale and provide at-scale kiosk for credit card transactions and scale tickets.
- FRF Sludge Hauling RFQ – Hauling rates were being sought by Brown County for Fox River Fiber Sludge delivery to Outagamie County Landfill.

Motion made by Supervisor Kaster, seconded by Supervisor Dantinne to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

Planning and Land Services

15. Planning and Land Services 2019 Capital Project 5-Year Outlook Summary.

Planning Director Chuck Lamine stated the only project was the STEM Innovation Center.

Motion made by Supervisor Dantinne, seconded by Supervisor Deslauriers to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

Planning Commission, Property Listing, Zoning – No agenda items.

16. Land Information Office – Appointment of Norb Dantinne to the Brown County Land Information Council. Bernie Erickson as substitute.

The state statutes required them to create a Land Information Council, this was the group that oversaw GIS mapping, programming services, air photos, and mapping that other departments were using for their various services. Their bylaws asked for an appointment from the PD&T Committee.

Motion made by Supervisor Kaster, seconded by Supervisor Tran to approve the appointment of Norb Dantinne to the Brown County Land Information Council, Bernie Erickson as sub. Vote taken. MOTION CARRIED UNANIMOUSLY

Public Works

17. Public Works 2019 Capital Project 5-Year Outlook Summary.

Fontecchio informed this represented what was passed last month for the CIPs.

Motion made by Supervisor Dantinne, seconded by Supervisor Deslauriers to approve. Vote taken. MOTION CARRIED UNANIMOUSLY

18. Recommendation and Approval of Courthouse Dome Restoration.

Risk Manager Greg Gerber informed they had met with Simpson Gumpertz & Heger (SGH), the consultants who recommended the finish on the courthouse dome. They were aware of the county's dissatisfied with the eventual look of the dome and had made an offer to compensate for some repair work. They were not saying their recommendation was wrong but they understood that the county was not happy with the outcome. If the county wanted to clean it and let it patina, they will reimburse the cost of the linseed oil finish plus an additional $10,000 towards cleaning costs equaling $40,000. If the board decided to have it cleaned and refinished with a different product, they will give the county $70,000 to have the issue resolved.

Several handouts were provided including a report from SGH (attached), Fontecchio stated bottom-line they needed to clean it as the linseed oil reacted badly and either let patina or try another product. Teresa Sedmak from Everbrite

Coatings offered to come speak to the board.

Tran was with Kaster, structurally as long as it was safe, she didn't see a reason to every few years put money into making it shiny. Dantinne felt leaving it to run its natural course made sense, patina naturally sealed it.

Motion made by Supervisor Kaster, seconded by Supervisor Tran to clean the courthouse dome to patina naturally and accept the contribution from Simpson Gumpertz & Heger (SGH) for $40,000. Vote taken. MOTION CARRIED UNANIMOUSLY

19. Recommendation and Approval Public Works Tree Trimming Policy.

Referring to the packet material, Fontecchio hoped he incorporated the comments from the last meeting and felt improvements were made. He highlighted and went over important things to note. He informed they had plans to put information on their website and they were trying to build it up and be more robust so they have some of their policies listed.

Brusky stated the Allouez Village Administrator at the June 4th meeting suggested removing the optional permission to enter private property unless they specifically outlined what exactly that meant and recommending being very cautious on that language. She contacted him today and he responded that it was much better than before but still questioned the wording for permission to enter private property although he understood the reasoning. Proper cuts were always the best way to trim. This was still a red flag for him but if counsel had reviewed and saw no issue, than fine. The noticing timeline was still the same as the previous one and again he understood some of this and would expect that residents would be given as much advance notice as possible. Weather always played into all of this. Brusky was wondering if Corporation Counsel had seen this and had recommendations. Fontecchio generated a letter word for word that was in the document except the part about being billed. He could bring it back at any time. Their plan was as operations went through and saw trees overhanging in the summertime, they were going to write a letter to the landowner informing trees were overhanging and they may cut them if they so choose, if not they will cut between October and April. He was hoping this was the second notice. Chapter 83 gave them the authority to go in without anyone's permission and he didn't want to do that. They run into quite a few people that don't respond so as they come through. After looking at it they felt it was a decent compromise to grant permission. Brusky felt they would be reasonable about the schedule for work but technically it didn't factor in that reasonableness. Fontecchio stated it was tough, they didn't want to take out that option and they wanted to communicate as much as possible and go from there.

Fontecchio stated maybe they see how this went for a year and revisit to see if there were any problems or if they needed to tweak it. He felt that was fair and would be glad to.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to approve the Public Works Tree Trimming Policy. Vote taken. MOTION CARRIED UNANIMOUSLY

20. Summary of Operations.

Fontecchio informed the Capital Projects were adjusted after the Fox River Papermaking projects. They had the correct projects with the correct dollar values. CTH T in New Franklin came in pretty much right at budget, CTHG 33 from Kolbs Corner to Shirley, he believed that may come in under budget a few hundred thousand, T they were just starting on, south of 29. So far the weather had been really great this year. One thing he will be looking at was if they had some leftover money, at the end of the year they had the $154,000 slated for next year for Hoffman Rd. If he had that money and could accommodate some safety things from the safety plan, he may ask the board that they moved that up and get it done this fall. He believed he will have the resources and the available from a manpower point of view. He'll keep them informed. Kaster asked that they look at a part of GV in Ledgeview going south; it looks like it was busting up. Fontecchio informed they will take a look at it.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

21. Director's Report.

Fontecchio informed one adjustment that came about was the Town of Green Bay had decided not to utilize the county for snowplowing. As part of the budget process, his budget will show a reduction of one staff member and they will sell the oldest plow in the fleet. Their staffing report shows one open position so they won't be filling that.

They had a senior engineer position open as of May 11, 2018 and to date they had zero applicants. He believed a lot of time engineers were seasonal; they were busy in the summer during construction. To get a senior engineer with a PE license and 5-years' experience, he felt the position would be open for a while.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

22. Register of Deeds – Budget Status Financial Report for June 2018 - Unaudited.

Motion made by Supervisor Deslauriers, seconded by Supervisor Tran to receive and place on file. Vote taken. MOTION CARRIED UNANIMOUSLY

Other

23. Acknowledging the bills.

Motion made by Supervisor Dantinne, seconded by Supervisor Deslauriers to acknowledge receipt of the bills. Vote taken. MOTION CARRIED UNANIMOUSLY

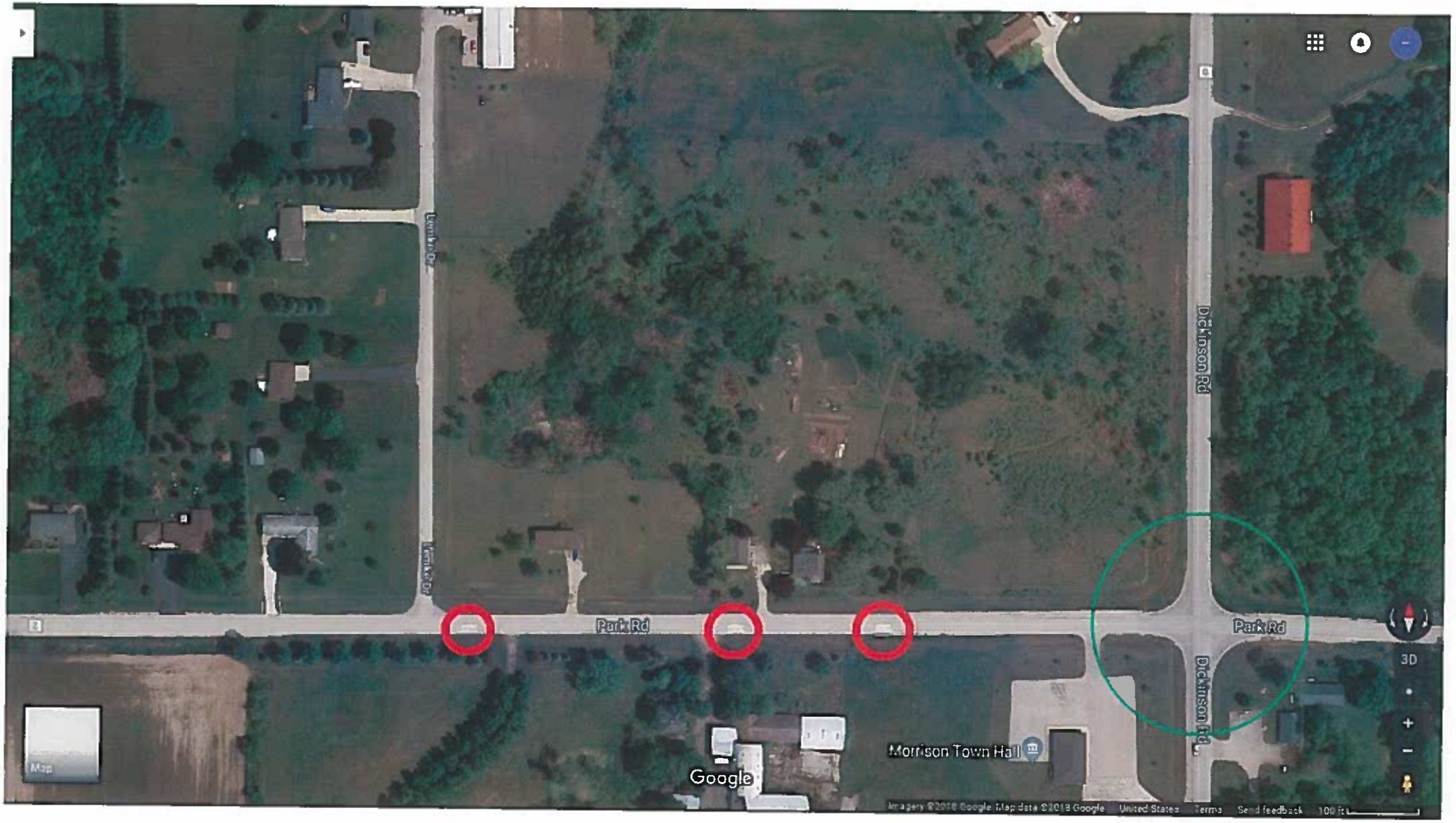
24. Such other matters as authorized by law. None.

25. Adjourn.

Motion made by Supervisor Dantinne, seconded by Supervisor Kaster to adjourn at 9:01 pm. Vote taken. MOTION CARRIED UNANIMOUSLY

Respectfully submitted,

Alicia A. Loehlein
Transcriptionist – Administrative Coordinator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U.S.Department of Transportation
Federal Highway Administration

Improve Visibility of Intersections by Providing Enhanced Signing and Delineation

WHERE TO USE

Unsignalized intersections that are not clearly visible to approaching motorists, particularly approaching motorists on the major road. The strategy is particularly appropriate for intersections with patterns of rear-end, right-angle, or turning crashes related to lack of driver awareness of the presence of the intersection.

Photos by: FHWA

DETAILS

Many unsignalized intersections are not readily visible to approaching drivers, particularly drivers on major-road approaches that are not controlled by stop or yield signs. Thus, intersection crashes may occur because approaching drivers may be unaware of the presence of the intersection. The visibility of intersections and, thus, the ability of approaching drivers to perceive them can be enhanced by signing and delineation. Improvements may include advance guide signs, advance street name signs, warning signs, pavement markings, post-mounted delineators, and supplemental beacons on advance signs.

The *FHWA Older Driver Highway Design Handbook* encourages such improvements to contribute to a better driving environment for older drivers. In particular, the handbook addresses advance guide signs and letter height on guide signs as key issues for older drivers. Advance warning signs, such as the standard intersection warning sign, can also alert drivers to the presence of an intersection. Providing a break in pavement markings—including centerlines, lane lines, and edge lines—at intersections also helps to alert drivers to the presence of an intersection.

KEY TO SUCCESS

Select a combination of signing and delineation techniques appropriate to conditions on particular unsignalized intersection approaches. This engineering assessment should, where possible, be accompanied by a human factors assessment of signing and delineation needs.

Also, the ability and commitment of the highway agency to adequately maintain the signing or delineation is important.

ISSUES

Care should be taken not to overuse traffic signing, which could result in drivers not perceiving the presence of intersections.

TIME FRAME ●○○

This strategy does not require a long development process. Signing and delineation improvements can typically be implemented in 3 months or less.

COSTS ●○○○

Costs to implement signing and delineation are relatively low. An agency's maintenance costs may increase.

EFFECTIVENESS

TRIED: Making drivers aware that they are approaching an intersection, through the use of enhanced signing and delineation, should improve safety at the intersection because drivers will be more alert to potential vehicles on the cross streets. This heightened awareness will quicken drivers' reaction times when conflicts occur.

One study concluded that installing double stop signs can reduce all crashes up to 11% and right-angle crashes up to 55%. The same study concluded that installing advance warning signs can reduce all crashes up to 30% at urban locations and 40% at rural locations.

Another analysis indicated a crash reduction of 70% when flashing beacons were installed on advance of 3-leg intersections and up to 39% at 4-leg intersections.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

Signing in conformance with the *Manual on Uniform Traffic Control Devices* should be provided.

For more details on this and other countermeasures: http://safety.transportation.org

For more information contact:

FHWA Office of Safety Design
E71, 1200 New Jersey Avenue SE
Washington, D.C. 20590
(202) 366-9064
http://safety.fhwa.dot.gov

FHWA Resource Center - Safety and Design Team
19900 Governor's Drive, Suite 301
Olympia Fields, IL 60461
(708) 283-3545
http://www.fhwa.dot.gov/resourcecenter

U.S.Department of Transportation
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Safe Roads for a Safer Future
Investment in roadway safety saves lives

2/08

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Federal Highway Administration

Install Splitter Islands on the Minor-Road Approach to an Intersection

WHERE TO USE

Minor road approaches to unsignalized intersections where the presence of the intersection or the stop sign is not readily visible to approaching motorists. The strategy is particularly appropriate for intersections where the speeds on the minor road are high.

Photo by: FHWA

DETAILS

Many unsignalized intersections are not visible to approaching drivers. Thus, intersection crashes may occur because one or more drivers may be unaware of the intersection. "Splitter" islands can be installed on minor road approaches to call attention to the presence of the intersection and to guide traffic through the intersection. A splitter island refers to a channelizing island that separates traffic in opposing directions of travel, as opposed to islands that separate merging or diverging traffic in the same direction of travel. Splitter islands are particularly appropriate on approaches to skewed intersections.

KEY TO SUCCESS

Designing the island in accordance with the principles of channelization presented in the AASHTO *Policy on Geometric Design of Highways and Streets* and *NCHRP Report 279: Intersection Channelization Design Guide*. The visibility of the splitter island will, in part, depend on its placement relative to the profile of the major road.

ISSUES

There is a potential for the safety effectiveness of splitter islands to be negated if the shoulder is used in place of widening the roadbed to accomplish the channelization. Raised islands on a minor street could also become a safety hazard along a high-speed major roadway if not designed and delineated properly.

TIME FRAME ●●○

Intersection improvements involving splitter islands generally take approximately 1 to 2 years to design and construct. Significant channelization may require minor right-of-way acquisition, which could further increase implementation time.

COSTS ●●○○

Costs involved in implementing splitter islands are moderate, unless acquisition of additional right-of-way is required, in which case costs may be higher.

EFFECTIVENESS

TRIED: Splitter islands are generally perceived to be effective in defining the presence of an intersection. When properly applied, they may reduce traffic speeds and intersection crashes, but there is no consensus on their effectiveness.

An Australian study concluded that installing splitter islands on minor road approaches can reduce injury crashes by 35% at rural locations and by 40% at urban locations.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

For more details on this and other countermeasures: http://safety.transportation.org

For more information contact:

FHWA Office of Safety Design
E71, 1200 New Jersey Avenue SE
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(202) 366-9064
http://safety.fhwa.dot.gov

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Provide a Stop Bar (or Provide a Wider Stop Bar) on Minor Road Approaches

WHERE TO USE

Approaches to unsignalized intersections having traffic control devices that are not currently being recognized by some approaching motorists. Locations should be identified by patterns of crashes related to lack of driver recognition of the traffic control device (e.g., right-angle crashes related to stop sign violations).

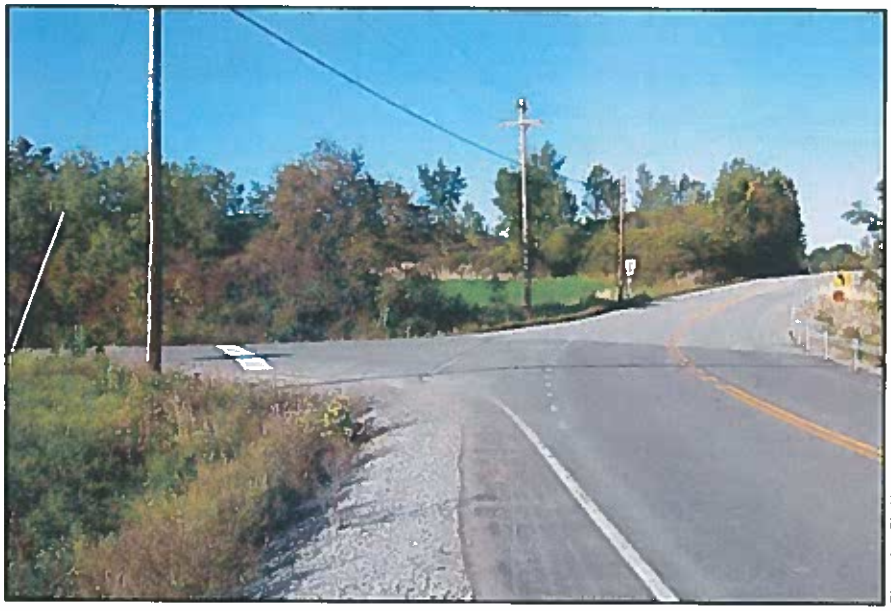

Photo by: FHWA

This photo shows a wide stop bar installed on the approach to an intersection within a curve.

DETAILS

Providing visible stop bars on minor road approaches to unsignalized intersections can help direct the attention of drivers to the presence of the intersection. Where a stop bar is already in place, provision of a wider stop bar may be considered.

KEY TO SUCCESS

Identify appropriate intersection approaches that would benefit from its use. The strategy is expected to be especially effective when applied on approaches where conditions allow the stop bar to be seen by an approaching driver at a significant distance from the intersection. This strategy is appropriate for locations with a pattern of angle crashes associated with stop sign violations where approaching drivers may not realize that an intersection is present until it is too late to stop.

ISSUES

None identified.

TIME FRAME ●○○

This strategy can be implemented quickly, typically in less than 3 months.

COSTS ●○○○

Costs for implementing this strategy are nominal. An agency's maintenance costs may increase.

EFFECTIVENESS

TRIED: One limited study has indicated that installing stop bars (or wider stop bars) on minor road approaches may reduce crashes by up to 19% and reduce right-angle crashes by up to 47%.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

Signing in conformance with the *Manual on Uniform Traffic Control Devices* should be provided.

For more details on this and other countermeasures: http://safety.transportation.org

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Install Larger Regulatory and Warning Signs at Intersections

WHERE TO USE

Approaches to unsignalized intersections with patterns of rear-end, right-angle, or turning collisions related to lack of driver awareness of the presence of the intersection.

Photo by: FHWA

DETAILS

The visibility of intersections and, thus, the ability of approaching drivers to perceive them can be enhanced by installing larger regulatory and warning signs at intersections. Such improvements may include stop signs, intersection warning signs, stop ahead signs, pavement markings, and post-mounted delineators. The FHWA *Older Driver Highway Design Handbook* encourages such improvements to contribute to a better driving environment for older drivers.

KEY TO SUCCESS

Select a combination of regulatory and warning sign techniques appropriate to conditions on particular approaches to unsignalized intersections. This engineering judgment should, where possible, be accompanied by a human factors assessment of the need for regulatory and warning signs.

Another key is the ability and commitment of the highway agency to adequately maintain the signs.

ISSUES

Care should be taken not to overuse traffic signing, as it is likely that drivers will become accustomed to their presence and fail to respond as desired or intended. Agencies should strive to use special signing only where a specific problem or circumstance indicates the need.

TIME FRAME ●○○

This strategy does not require a long development process. Signing improvements can typically be implemented in 3 months or less.

COSTS ●○○○

Costs for implementing this strategy are nominal. An agency's maintenance costs may increase.

EFFECTIVENESS

TRIED: One limited study has indicated that installing larger stop signs may decrease all collisions by up to 19%.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

Signing in conformance with the *Manual on Uniform Traffic Control Devices* should be provided.

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Call Attention to the Intersection by Installing Rumble Strips on Intersection Approaches

WHERE TO USE

Approaches to unsignalized intersections with traffic control devices that are not currently being recognized by some approaching motorists. Locations should be identified by patterns of crashes related to lack of driver recognition of the traffic control device (e.g., right-angle crashes related to stop sign violations). Rumble strips should be considered only after an adequate trial of less intrusive treatments.

Photo by: FHWA

DETAILS

Rumble strips can be installed on intersection approaches to call attention to the presence of the intersection and to the traffic control in use at the intersection. Rumble strips should be used sparingly. Their effectiveness is dependent on being unusual. Rumble strips are normally applied when less intrusive measures—such as pavement markings like "STOP AHEAD" signs, markings, or flashers—have been tried and have failed to correct the crash pattern. Rumble strips can be used to supplement such traffic control devices. For example, a rumble strip can be located so that when the driver crosses the rumble strip, a key traffic control device such as a "STOP AHEAD" sign is directly in view. Rumble strips in the traveled way can also be used on a temporary basis to call attention to changes in traffic control devices, such as installation of a stop sign where none was present before. *NCHRP Synthesis of Highway Practice 191* reviews the state of the art of rumble strip usage.

KEY TO SUCCESS

Use rumble strips sparingly so that they retain their surprise value in gaining the driver's attention.

ISSUES

Rumble strips in the traveled way have several potential pitfalls that should be considered carefully in any decision to implement them. They include (1) noise that may disturb nearby residents; (2) potential loss-of-control problems for motorcyclists and bicyclists; (3) difficulties created for snowplow operations; and (4) inappropriate driver responses, such as using the opposing travel lanes to drive around the rumble strips.

TIME FRAME ●○○

Rumble strips typically can be implemented in 3 months or less.

COSTS ●○○○

Costs to implement rumble strips would normally be nominal.

EFFECTIVENESS

TRIED: Rumble strips are generally perceived to be effective in reducing intersection crashes when used appropriately, but there is no consensus on their effectiveness. One study concluded that transverse rumble strips may decrease overall crashes by up to 28% and rear-end crashes by up to 90%. Another study indicated that rumble strips installed in rural locations can decrease overall crashes up to 35%.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections, except that it would not be compatible with strategies involving removal or relocation of an intersection.

For more details on this and other countermeasures: http://safety.transportation.org

For more information contact:

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Provide Supplementary Stop Signs Mounted Over the Roadway

WHERE TO USE

Unsignalized intersections with patterns of right-angle crashes related to lack of driver awareness of the presence of the intersection. In particular, it might be appropriate to use this strategy at the first stop-controlled approach (possibly of a series) located on a long stretch of highway without any required stops, or at an intersection located after a sharp horizontal curve.

Photo by: Texas Transportation Institute

DETAILS

Many stop signs at stop-controlled intersections are not readily visible to approaching drivers due to geometric conditions, presence of vegetation, or other objects (such as tall vehicles) that can limit the view of the regular stop signs. Thus, intersection crashes may occur because approaching drivers may be unaware of the presence of the stop sign at the intersection. The visibility of stop signs and, thus, the ability of approaching drivers to perceive them, can be enhanced by providing supplementary stop signs suspended over the roadway.

The target for this strategy should be stop signs at intersections that are not clearly visible to approaching motorists, particularly approaching motorists on the minor road. The strategy is particularly appropriate for intersections with patterns of rear-end, right-angle, or turning collisions related to lack of driver awareness of the presence of the intersection or stop sign.

KEY TO SUCCESS

Locate the supplementary overhead sign (or signs) in the direct line of sight of approaching drivers.

ISSUES

Unless the signs are mounted on existing overhead structures (mast arms), additional hardware will have to be placed on the roadside, which could become an additional object that a vehicle may strike if it leaves the roadway.

TIME FRAME ●○○

This strategy does not require a long development process and can typically be implemented in 3 months or less.

COSTS ●○○○

The costs involved in providing supplementary overhead stop signs are minimal when the signs are mounted on existing structures. The additional cost of providing a mast arm is moderate. Agencies may experience additional maintenance costs.

EFFECTIVENESS

TRIED: The safety effectiveness of providing supplementary stop signs mounted over the roadway has not been quantified.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

Supplementary signs should be in accordance with the MUTCD.

For more details on this and other countermeasures: http://safety.transportation.org

For more information contact:

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Provide Pavement Markings with Supplementary Messages

WHERE TO USE

Unsignalized intersections with patterns of rear-end, right-angle, or turning crashes related to lack of driver awareness of the presence of the intersection.

Photos by: FHWA

DETAILS

Providing pavement markings with supplementary messages (such as "STOP AHEAD") can help alert drivers and thus enhance the ability of approaching drivers to be more aware of the presence of the intersection. These markings should follow the *Manual on Uniform Traffic Control Devices*.

KEY TO SUCCESS

Select a combination of marking techniques appropriate to conditions on particular unsignalized intersection approaches.

Another key is the ability and commitment of the highway agency to maintain the markings adequately.

ISSUES

Potential difficulties may be encountered in the winter, when these markings may not be as visible to the driver. The pavement markings may also have a lower coefficient of friction compared to the rest of the approach, especially during wet conditions.

TIME FRAME ●○○

This strategy does not require a long development process and can typically be implemented in 3 months or less.

COSTS ●○○○

Costs to implement this strategy are nominal. An agency's maintenance costs may increase.

EFFECTIVENESS

TRIED: Limited studies have suggested that installing supplementary pavement messages may decrease overall crashes by 6% and right-angle crashes at urban locations by 30%.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

SUPPLEMENTAL INFORMATION

Supplementary pavement markings should follow the MUTCD, which drivers should understand with no need for special public education campaigns.

For more details on this and other countermeasures: http://safety.transportation.org

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Install Flashing Beacons at Stop-Controlled Intersections

WHERE TO USE

Unsignalized intersections with patterns of right-angle crashes related to lack of driver awareness of the intersection on an uncontrolled approach and lack of driver awareness of the stop sign on a stop-controlled approach.

Photos by: FHWA & Texas Transportation Institute

DETAILS

Overhead flashing beacons can be used at stop-controlled intersections to supplement and call driver attention to stop signs. Flashing beacons are intended to reinforce driver awareness of the stop sign and to help mitigate patterns of right-angle crashes related to stop sign violations. At two-way stop-controlled intersections, flashing beacons are used with red flashers facing the stop-controlled approaches and yellow flashers facing the unstopped approaches. At all-way stop-controlled intersections, red flashers face all approaches. Use of overhead flashing beacons can increase the visibility of intersections for approaching drivers, and can be used in conjunction with the signing, delineation, and flashing improvements discussed in Strategy E1.

KEY TO SUCCESS

Select intersections with crash patterns appropriate to mitigation by flashing beacons. Otherwise, the use of a flashing beacon may provide no safety benefit (or a negative safety benefit). Crash types mitigated by flashing beacons may include right-angle, rear-end, and turning crashes.

ISSUES

If the flashing beacons are not properly placed where they are clearly visible to approaching drivers, they may not be effective. Flashing beacons also should not be overused. Their effectiveness is attributed in part to their relative uniqueness (i.e., they are not typically found at every stop-controlled intersection). Some agencies have reported crashes at red/amber flashers where a driver facing a red flasher assumed that the intersecting approach also had a red flasher.

Flashing beacons are generally well understood by drivers. At times, drivers on minor streets may be confused regarding the nature of control on the major street.

TIME FRAME ●○○

Use of flashing beacons does not require extensive development; flashing beacons can be installed within 3 to 6 months. The major implementation problem is providing power to the site.

COSTS ●○○○

Costs of installing flashing beacons are generally nominal, with the greatest cost being the provision of power to the site.

EFFECTIVENESS

TRIED: Several studies have evaluated the safety effectiveness of flashing beacons at stop-controlled intersections. Ohio compared the safety at rural, low-volume intersections controlled by stop signs and controlled by flashing beacons in conjunction with stop signs. Ohio found that flashing beacons generally reduced vehicular speeds on the major road, particularly at intersections with sight distance restrictions, but the flashing beacons were not necessarily effective in reducing stop sign violations or crashes. Similarly, California found that overhead yellow-red flashing beacons did not significantly reduce the number of fatal crashes at stop-controlled intersections. Therefore, additional research may be desirable to further evaluate the safety effectiveness of this strategy.

Florida estimated that overall crashes may be reduced up to 26% and injury crashes may be reduced up to 50% after installing flashing yellow-red signal indications.

COMPATIBILITY

This strategy can be used in conjunction with most other strategies for improving safety at unsignalized intersections.

For more details on this and other countermeasures: http://safety.transportation.org

For more information contact:

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LED STOP Signs

What are LED STOP Signs?

Light-emitting diode (LED)-enhanced STOP signs are the familiar octagonal red signs with white lettering that also include red LEDs on the outer edge of the sign. The LEDs are configured to either operate continually, or to only flash when a detection system senses a vehicle approaching the sign.

Key Functions

Drivers approaching an intersection receive heightened visual input via the flashing LEDs, which:

- Increases conspicuity and awareness of the STOP sign under normal and low-visibility conditions
- Attempts to increase driver compliance and caution at stop-controlled intersections

Figure 1: Enhanced LED STOP Sign

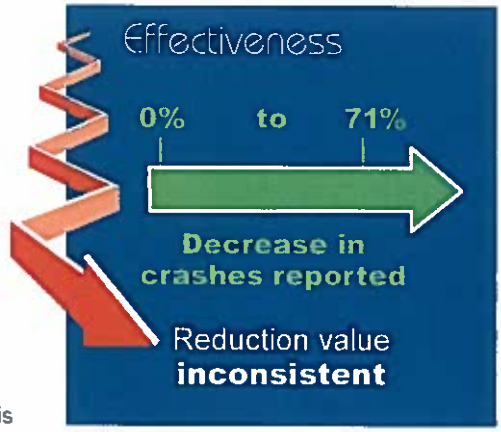
What is the purpose of LED STOP signs?

The purpose of LED STOP signs is to capture the driver's attention through supplemental visual input. It is intended to increase stopping compliance and prevent right-angle crashes by alerting drivers of upcoming roadway changes so they do not unintentionally run the STOP sign. Right-angle crashes are the most common type of crash that result in a fatality or serious injury at through-stop controlled intersections. Although some crashes involve drivers running a STOP sign, nearly two-thirds of angle crashes are attributed to drivers not selecting a large enough gap between their car and the approaching vehicle on the major road to safely complete a crossing or turning maneuver. This type of right-angle crash is not addressed by the installation of an LED STOP sign.

How effective are LED STOP signs?

Research[1] documents three primary performance measures for LED STOP signs: (1) deceleration rates of approaching vehicles, (2) the fraction of vehicles making a complete stop, and (3) change in the frequency of crashes at the intersection. The research included the following results[1]:

1. Adding LED STOP signs did not substantially change driver reaction to slow their vehicles as they approached the intersections – reported reductions were in the range of 1 to 3 miles per hour with slightly higher reductions at night.
2. The LED STOP signs did not change the fraction of vehicles making complete stops at the intersections (when minor approach drivers did not encounter opposing vehicles on the major approaches).
3. The estimated crash reduction was determined to be approximately 42 percent. However, this estimate is not statistically significant because of the small number of right-angle crashes at intersections with the LED installations. The statistical analysis indicates that the reduction may range between 0 and 71 percent; a more precise number cannot credibly be supported by the data.



What are the most suitable applications for LED STOP signs?

> *"Flashing LED STOP and YIELD signs should only be considered for installation in situations necessitating enhanced visibility of the sign. When usage is limited to special circumstances, flashing LED STOP and YIELD signs may be effective safety countermeasures."*
>
> *Section 6-5.07, MnDOT Traffic Engineering Manual*

Installing LED STOP signs reactively in response to one severe crash at one intersection is not likely to be an effective approach because of a low density of severe right-angle crashes at through-stop intersections, only a minority of crashes involve running the STOP sign, and a lack of consistent crash reduction estimate. Instead, a potentially more effective approach would be to install LED STOP signs selectively at the few intersections along a system that have actually experienced multiple crashes from drivers running stop signs. Alternatively, broader effective deployment across a system should include intersections identified to be high-risk based on a data-driven evaluation and where sight lines to the STOP sign are restricted by road geometry or topography.

Guidance from the MnDOT Traffic Engineering Manual (TEM) suggests that at least two of the following criteria should be met for the intersection to be considered for LED STOP sign installation:

- Limited visibility on approach to the intersection
- History of crashes documented to be caused by a failure to stop and deemed preventable by implementation of conspicuity improvements
- At a rural junction of two or more high speed trunk highways to warn drivers of an unexpected crossing of another highway
- At a rural junction of a trunk highway and a local road which has no STOP controlled intersection within five miles

In addition, the TEM advises that alternative improvements should be considered at the intersection prior to selecting a LED STOP sign, such as:

- Installing a STOP AHEAD sign or pavement message
- Increasing the size of the STOP sign or adding a second sign on the left side
- Adding retroreflective strips to the STOP sign support
- Install transverse rumble strips
- Add a STOP bar

Cost

- Per Intersection: $2,000 to $6,000
- Includes one LED-enhanced STOP sign on two approaches, sizes between 30" and 48"
- Cost primarily covers the LED and commonly solar charging equipment

Are there additional considerations?

If an agency decides to install an LED STOP sign at a particular intersection, it is recommended to document why that intersection was selected and why other similar intersections were not. Minnesota tort law provides a variety of immunities from accusations of negligence when an agency can clearly demonstrate their thought process leading to the decision to implement. END

References

1. Davis, G. and J. Hourdos. 2014. *Estimating the Crash Reduction and Vehicle Dynamics Effects of Flashing LED STOP Signs.* MnDOT Report 2014-02. http://www.its.umn.edu/Publications/ResearchReports/reportdetail.html?id=2330. Accessed June 2017.
2. Arnold, E. and K. Lantz. 2007. *Evaluation of Best Practices in Traffic Operations and Safety: Phase I: Flashing LED STOP Signs and Optical Speed Bars.* Report VTRC 07-R34. http://www.virginiadot.org/vtrc/main/online_reports/pdf/07-r34.pdf. Accessed June 2017.
3. Minnesota Department of Transportation (MnDOT). 2015. *Traffic Engineering Manual, Chapter 6 – Traffic Signs and Delineation.* http://www.dot.state.mn.us/trafficeng/publ/tem/. Accessed June 2017.

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Meghan Buechel

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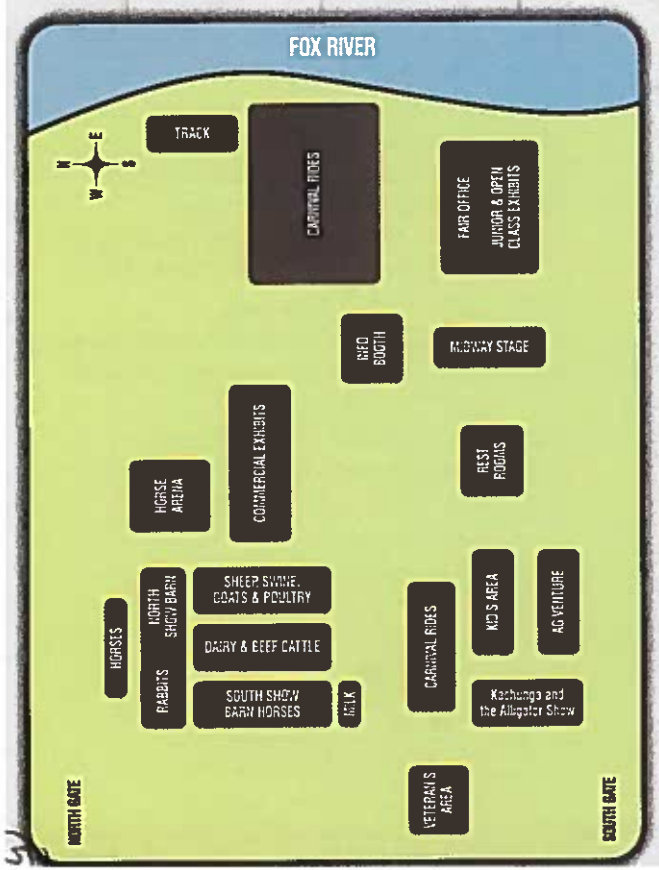

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Kachunga & The Alligator Show

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2018 Brown County Fair — DePere, WI

Event Schedule

WEDNESDAY (AUGUST 15)

- 8:00AM Open Division Rabbit Judging - North Show Barn
- 8:00AM Open Division Poultry Judging - Poultry Barn
- 8:00AM Junior Division Rabbit Judging - North Show Barn
- **1:00PM Kachunga and the Alligator Show**
- 2:00PM Nick's Kids Show - Kid's Area Stage
- **3:00PM CARNIVAL OPENS**
- **3:00PM Kachunga and the Alligator Show**
- **3:00 - 6:00PM Ag Venture Fun - Kid's Area**
- 4:00PM Nick's Kids Show - Kid's Area Stage
- 5:30PM Homemade Wine and Beer Judging with tasting to follow - Exhibit Building
- **6:00PM Kachunga and the Alligator Show**
- **7:00PM Demo Derby - Track**

THURSDAY (AUGUST 16)

- 8:00AM Jr. Pleasure and Draft Horse Judging - Horse Arena
- 9:00AM Swine Judging - North Show Barn
- **9:00-11:30AM Library Morning with Alice In Dairyland**
- **9:00AM-5:00PM Ag Venture Fun - Kid's Area**
- 10:00AM Beef Judging - South Show Barn
- **10:30AM Kachunga and the Alligator Show**
- 11:30AM Nick's Kids Show - Kid's Area Stage
- **12 NOON CARNIVAL OPENS**
- **12 Noon Meyer 10 Horse Pyramid Hitch - Horse Arena**
- 12:30PM Miller & Mike Clown Stage Show - Kid's Area Stage
- 1:00PM Sheep Judging - North Show Barn
- **1:00PM Kachunga and the Alligator Show**
- 2:00PM Nick's Kids Show - Kid's Area Stage
- 3:00PM Miller & Mike Clown Stage Show - Kid's Area Stage
- 4:00PM Nick's Kids Show - Kid's Area Stage
- 5:30PM Miller & Mike Clown Stage Show - Kid's Area Stage
- 5:30PM Youth Judging Contest - South Show Barn
- **5:30PM Meyer 10 Horse Pyramid Hitch - Horse Arena**
- **6:00PM Kachunga and the Alligator Show**
- **7:00PM Truck Pull - Track**
- **7:30PM Avenue 55 - (Variety) Midway Music Stage**

FRIDAY (AUGUST 17)

- 8:00AM Open Division Pleasure and Draft Horse Judging Horse Arena
- 9:00AM Goat Judging - North Show Barn
- 9:15AM Dairy Judging - South Show Barn
- **10:30AM Kachunga and the Alligator Show**
- **11:00AM-5:00PM Ag Venture Fun - Kid's Area**
- 11:30AM Nick's Kids Show - Kid's Area Stage
- **12 NOON CARNIVAL OPENS**
- **12 Noon Meyer 10 Horse Pyramid Hitch - Horse Arena**
- 12:30PM Miller & Mike Clown Stage Show - Kid's Area Stage
- **1:00PM Kachunga and the Alligator Show**
- 2:00PM Nick's Kids Show - Kid's Area Stage
- 3:00PM Miller & Mike Clown Stage Show - Kid's Area Stage
- **3:00PM Third Degree - (Variety) Midway Music Stage**
- 4:00PM Nick's Kids Show - Kid's Area Stage
- 5:00PM Miller & Mike Clown Stage Show - Kid's Area Stage
- **6:00PM Kachunga and the Alligator Show**
- **6:00PM Meyer 10 Horse Pyramid Hitch - Horse Arena**
- **7:30PM PRCA Rodeo - Horse Arena - Presented by Broadway Automotive**
- **8:30PM Panic Station - (Pop, Rock, Funk) Midway Stage**

SATURDAY (AUGUST 18)

- **10:00AM CARNIVAL OPENS**
- **10:30AM Kachunga and the Alligator Show**
- **11:00AM Kiddie Showmanship - South Show Barn**
- **11:00AM-5:00PM Ag Venture Fun - Kid's Area**
- **11:00AM Tractor Pull - Track**
- 11:30AM Nick's Kids Show - Kid's Area Stage
- **12 Noon Meyer 10 Horse Pyramid Hitch - Horse Arena**
- 12 NOON Cream Puff Eating - Ag Venture Tent
- 12:30PM Miller & Mike Clown Stage Show - Kid's Area Stage
- **1:00PM Kachunga and the Alligator Show**
- 1:30PM Cream Puff Eating - Ag Venture Tent
- 2:00PM Nick's Kids Show - Kid's Area Stage
- **2:00PM Petty Cash - (Variety) Midway Stage**
- 2:30PM Cream Puff Eating - Ag Venture Tent
- 3:00PM Miller & Mike Clown Stage Show - Kid's Area Stage
- 4:00PM Nick's Kids Show - Kid's Area Stage
- 4:00PM 4-H & FFA Animal Auction - South Show Barn
- **5:00PM Kachunga and the Alligator Show**
- 5:30PM Miller & Mike Clown Stage Show - Kid's Area Stage
- 6:00PM Nick's Kids Show - Kid's Area Stage
- **6:00PM Meyer 10 Horse Pyramid Hitch - Horse Arena**
- **7:30PM PRCA Rodeo - Horse Arena - Presented By Broadway Automotive**
- **8:30PM Star Six Nine - (Country) Midway Stage**

SUNDAY (AUGUST 19)

$7 at the gate

- 9:00AM Horse Gymkhana - Horse Arena
- **10:00AM Polka Mass - The Sugarbush Boys Midway Stage**
- **10:00AM-4:00PM Military Services & Veterans Meet & Greet with Music - Veteran's Area**
- 10:00AM 4-H Robotic Demo - Kid's Area Stage
- **11:00AM CARNIVAL OPENS**
- **11:00AM Horse Pull - Track**
- 11:00AM Nick's Kids Show - Kid's Area Stage
- **11:00AM-6:00PM Ag Venture Fun - Kid's Area**
- 11:30AM 4-H Fashion Show - Kids Area Stage
- **12 Noon Meyer 10 Horse Pyramid Hitch - Horse Arena**
- **12 Noon Kachunga and the Alligator Show**
- 12:30PM Century Farm Recognition - Ag Venture Tent
- 1:00PM Dress the Animal Contest - South Show Barn
- 1:00PM Miller & Mike Clown Stage Show Kid's Area Stage
- 2:00PM Nick's Kids Show - Kid's Area Stage
- 2:30PM 4H and Cloverbud Graduation - South Show Barn
- **2:30PM Kachunga and the Alligator Show**
- **3:00PM Military Appreciation Ceremony Honoring Active, Past & Present Reservists, & National Guard**
- **4:00PM Ignite - (Pop) Midway Stage**
- **4:00PM Meyer 10 Horse Pyramid Hitch - Horse Arena**
- 4:00PM Junior Fair Herdsmanship & Billboard Awards South Show Barn
- 4:00PM Nick's Kids Show - Kid's Area Stage
- **5:00PM Kachunga and the Alligator Show**
- 5:30PM Miller & Mike Clown Stage Show Kid's Area Stage

All Events Subject to Change

★All-Access★ **PASS**

Ticket price includes Carnival Rides, Parking, Events and ALL Entertainment!

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NEVILLE PUBLIC MUSEUM
OF BROWN COUNTY
BRIDGING COMMUNITIES. CONNECTING GENERATIONS.

FOR IMMEDIATE RELEASE

Join us at the Neville Public Museum for Explorer Wednesday: Community Partner Night!

Green Bay, WI---July 27, 2018---Community Partner Night will feature activities on the grounds of the Museum as well as inside from the University of Wisconsin Extension, the Brown County Dairy Promotions Board and the Brown County Fair Association

Join us for Community Partner Night on Wednesday, August 1, from 5:00 p.m. to 8:00 p.m.

Activities

Love being outdoors? Want to learn about archery? Check out the partnership between Brown County, 4-H Shooting Sports and the Brown County Parks Department that brings **youth archery** to the County!

The Community Garden Program provides garden plot rental and horticulture education for community members and Master Gardener Volunteers aid the University of Wisconsin Extension staff by helping people in the community better understand horticulture and their environment. **Check out the *Planting for a Purpose*** mission and find out how you can plant a garden plot and donate fresh produce to local food pantries.

Brown County Dairy Promotion Committee promotes agriculture and dairy products in Brown County schools and the community. **Try your hand at milking Addie the Dairy Cow!**

Enjoy **agriculture and STEM hands-on activities** like crayon banks and corn crafts!

Discover what's new at the Brown County Fair and enter a drawing for free tickets!

For more information please visit www.NevillePublicMuseum.org.

Submitted by:
Rachel Ott
Neville Public Museum Foundation
Ott_RL@co.brown.wi.us
210 Museum Place
Green Bay, WI 54303
920-448-7874
www.NevillePublicMusuem.org

PUBLIC WORKS DEPARTMENT
Brown County

2198 GLENDALE AVENUE
GREEN BAY, WI 54303
PHONE (920) 492-4925 FAX (920) 434-4576
EMAIL: bc_highway@co.brown.wi.us

BROWN COUNTY
PAUL A. FONTECCHIO, P.E.
DIRECTOR

TO: PD&T Committee

FROM: Paul Fontecchio, P.E.

DATE: July 23, 2018

RE: Courthouse Dome Restoration

On June 26, 2018, The Brown County Public Works Department received a summary letter from Simpson Gumpertz & Heger (SGH) pertaining to the Courthouse Dome. SGH was the engineering firm Brown County hired in 2016 for the design of the Courthouse Dome Restoration Project. The summary letter (attached) outlines the meetings, discussions, and investigations performed to date, along with an analysis of cleaning and coating options.

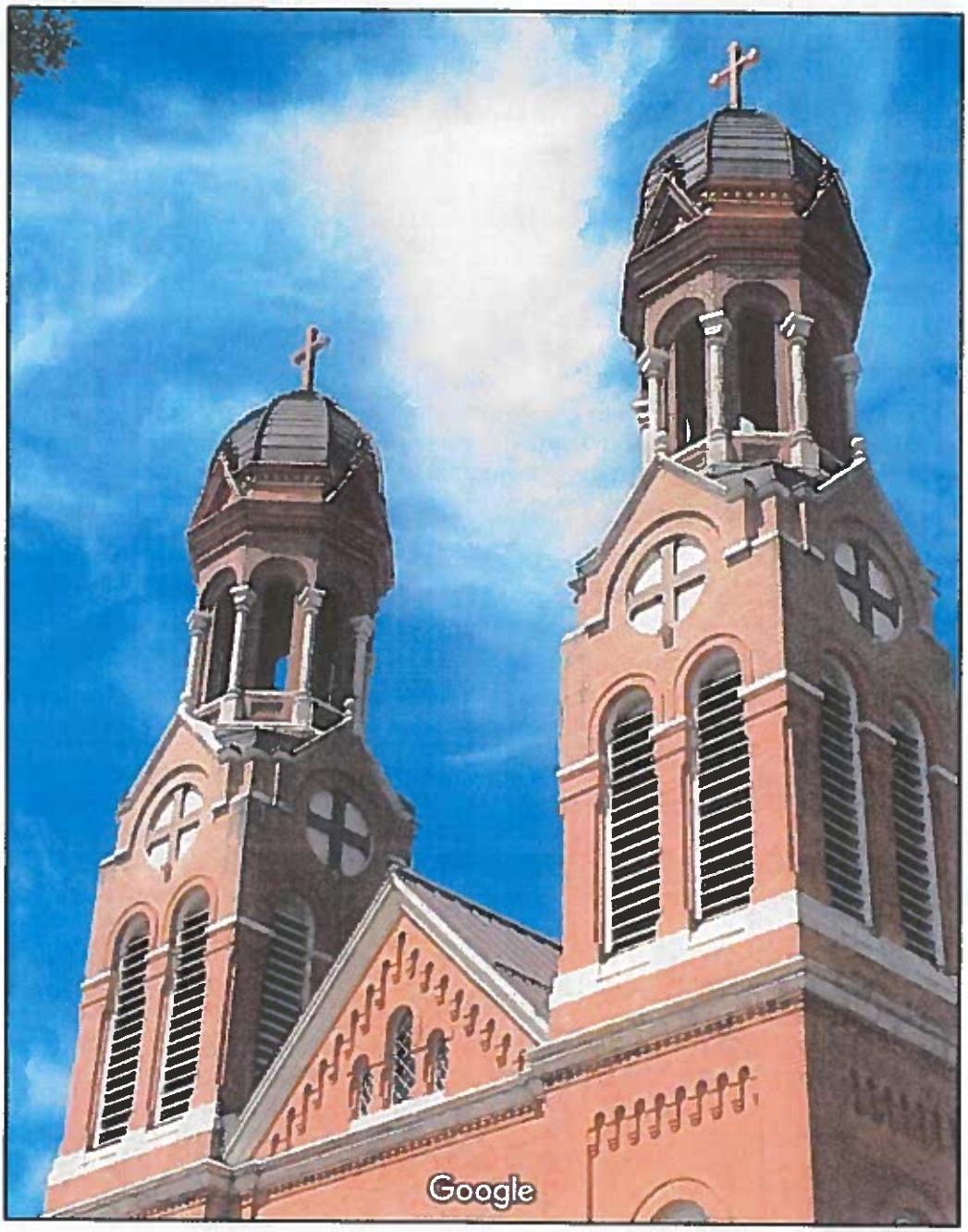
The report acknowledges that, "The application of the boiled linseed oil did not keep the copper red and shiny. Rather, the dome has turned more of a blackish color." The report goes on to say that the reasons for this are not fully known at this time; however, "SGH laboratory tests show the black material removed is consistent with copper tarnish, linseed oil, and atmospheric deposits."

The blackening of the copper is not part of the natural oxidation process of copper - it is the result of a combination of copper oxidation, linseed oil, and atmospheric deposits. As such, Brown County Public Works is recommending the removal of the discoloration by cleaning the dome with glass beads and cleaning solution. This will remove the tarnish, limit damage to the copper, and prepare the surface for either allowing the dome to patina or application of another coating product with a better performance record.

On July 13, 2018 Brown County met with SGH to discuss the restoration of the dome. If the County Board decides to allow the dome to patina, SGH will reimburse Brown County $30,000 for the cost and application of the boiled linseed oil, and will contribute $10,000 toward cleaning the dome. If the County Board decides it wants to keep the dome a shiny copper color, SGH will contribute $70,000 toward cleaning and re-application of another coating product.

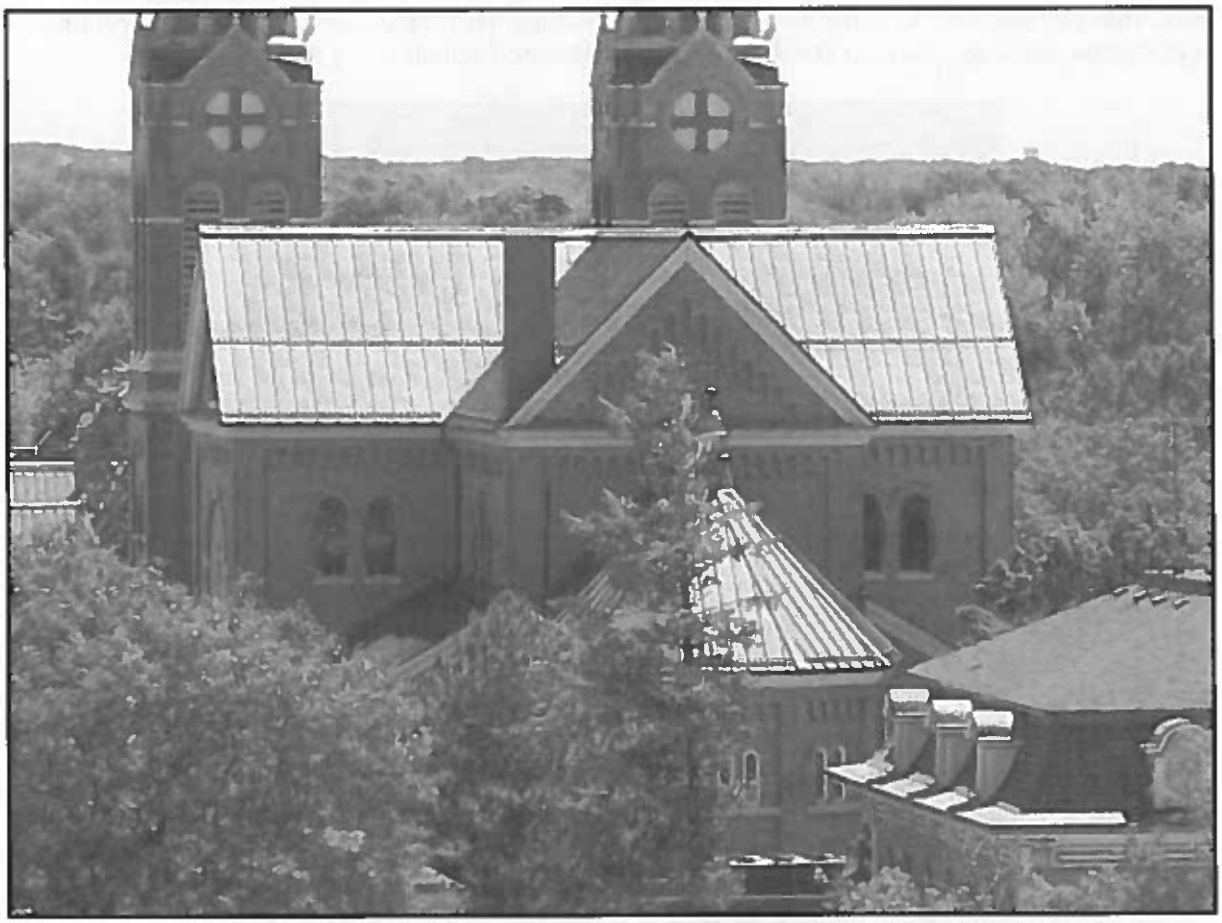
The PD&T Committee will need to make a recommendation to the Board as a whole on whether to allow the copper to oxidize naturally (patina) after cleaning or to recoat the copper with another coating product.

The picture below is from Google images taken in June 2017 of the Saint Francis Xavier Roman Catholic Cathedral at the intersection of Monroe and Doty downtown Green Bay. This roof was done in 2015 and the domes were replaced in 2007.

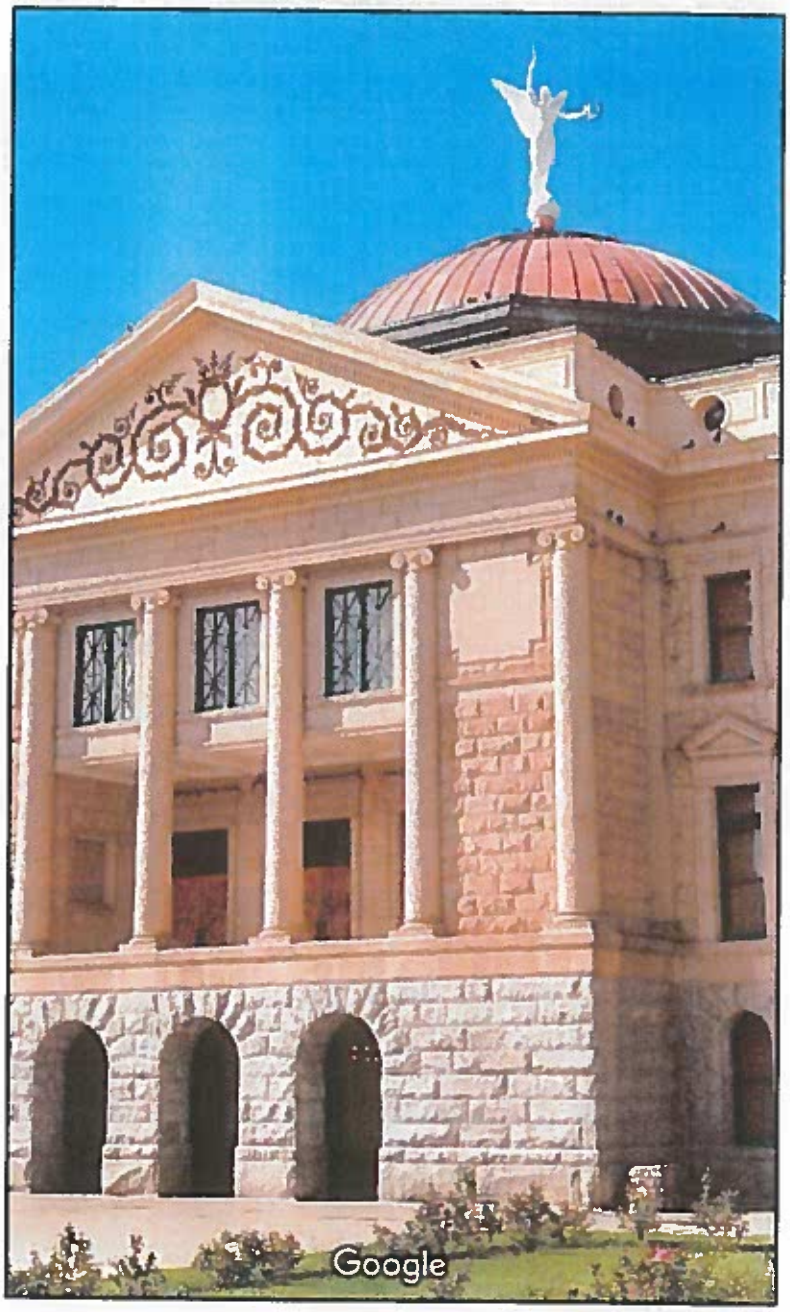


The roof and small domes have been allowed to naturally oxidize and are currently a bronze/brown color. Eventually it will turn green as the oxidation process continues.

Below is another picture of the roof taken 7/16/18.



The picture below is from Google images taken in November 2016 of the Arizona State Capital Building. This dome was recoated in 2012 with a product called Everbrite. The President of Everbrite, Inc. is willing to come to Green Bay to discuss her product with Brown County if that is an option the County would like to pursue (see attached email).



The 2017 Courthouse Dome Restoration Project repaired the masonry and limestone at the base of the dome, replaced the 105+ year old thinning copper roof, and restored the clock faces. Of the $1.7 million spent repairing and restoring the dome, $30,000 was spent on the linseed oil. If the County Board decides to keep the dome shiny, we will be budgeting $15,000 a year for re-coating purposes as needed (hopefully 5-7 years or more).

26 June 2018

SIMPSON GUMPERTZ & HEGER
Engineering of Structures and Building Enclosures

Mr. Jon Morehouse
Brown County Public Works
Sophie Beaumont Building
111 North Jefferson Street, Room L25
Green Bay, WI 54301

Project 160990 – Brown County Courthouse Dome Restoration, 100 S. Jefferson Street, Green Bay, WI

Dear Mr. Morehouse:

This letter provides a summary of our meetings with copper roofing industry professionals and coating manufacturers, and related efforts to understand options for the County to address the appearance of the Courthouse Dome copper roofing.

1. BACKGROUND

New sheet copper roofing was installed on the Courthouse Dome in mid- to late-2017. The copper was coated with boiled linseed oil (the historic term for linseed oil that is combined with drying agents that accelerate hardening and polymerization). Based on both the research conducted and reviewed in our November 30, 2016 Dome Restoration Phase 1: Needs Assessment Report and the recommendations of Revere Copper, we specified boiled linseed oil. The purpose of coating new copper with boiled linseed oil was to impede the natural surface oxidation and in an effort to achieve the County's desire to allow the copper to retain its initial bright "red" shiny appearance.[1]

Unfortunately, the boiled linseed oil has not performed satisfactorily for reasons that are not fully investigated at this point. The application of the boiled linseed oil did not keep the copper red and shiny. Rather, the dome has turned more of a blackish color. SGH has been working with the County to understand alternative options to the boiled linseed oil coating.

2. FIELD SAMPLES

On 24 May 2018, Simpson Gumpertz & Heger Inc. ("SGH") collected samples of the black tarnish/atmospheric deposits from the surface of the dome copper, and placed three new samples of copper on a flat roof area of the Courthouse. SGH laboratory tests show the black material removed is consistent with copper tarnish, linseed oil, and atmospheric deposits. The three copper samples on the roof were newly purchased bright copper; each was bent and fastened to a wood stand with half the copper horizontal and half vertical, facing southwest (called west herein). Each sample was prepared with the right (north) third washed with Simple Green Cleaner, the center section left untouched/uncleaned, and the right third section cleaned with a 3M Scotch-Bright Extreme Scrub Hand Pad. One sample was coated with Incralac (a clear acrylic polymer), another with Everbrite (a clear acrylic polymer), and a third with boiled linseed oil. The County has monitored the samples from the time of installation on 24 May 2018, with the latest review on 22 June 2018. Based on our review of the photographs taken on different days, it appears that all samples have darkened slightly in the four weeks since installation.

[1] Copper typically tarnishes to a dull brown and then to a light green patina as stable oxides form (local atmospheric conditions can result in purple and black oxides, but eventually a light green oxide forms on most exposed copper).

3. INFORMATION OBTAINED FROM MEETINGS WITH OTHERS

SGH and Brown County participated in meetings with copper roofing industry professionals and coating manufacturers. The following sections summarize these discussions, supplemented as noted.

3.1 Teleconference with Jim Walas, Revere Copper Products, Inc.

Mr. Walas is a leading technical resource at one of the nation's leading manufacturers of architectural sheet copper and supplier of the copper installed on the County Courthouse Dome. Due to difficulties of keeping copper bright and shiny, Mr. Walas urged us to consider letting the Dome tarnish naturally to green, but that if it must be kept from that state, let it oxidize to brown naturally, then limit future tarnish with a coating. Mr. Walas cautioned that few examples of bright, shiny copper roofing exist, and that success will depend on preparation, local atmospheric conditions, exposure, and maintenance. Mr. Walas has seen new copper develop a black tarnish like the Dome, rather than brown. Mr. Walas advised that if cleaned to bright and shiny, there is a narrow window to apply a coating due to the rapid onset of oxidation. Mr. Walas specifically stated that the copper surface must be cleaned, neutralized, and treated immediately and that work be performed from the top down using non-metallic Scotch-Brite pads to remove oxidation. Mr. Walas expressed concern about gasses trapped by any coating which can cause oxidation beneath the coating.

For decades, Revere Copper has published an industry standard on copper roofing, titled "Copper and Common Sense". This leading copper reference describes cleaning as generally unnecessary except at solder joining where mechanical abrasion is the appropriate method. If cleaning is necessary, a solution of tri-sodium phosphate (TSP) and warm water is appropriate (e.g., to remove material deposited on the surface during manufacturing). Boiled linseed oil is described as a coating material for limiting tarnish. The Revere Copper document "Clear Coatings for Copper" provides an analysis of clear coatings and the reasons for suggesting that "copper on large, exterior applications not be clear coated but allowed to weather naturally."

3.2 Teleconference with Larry Peters, Copper Development Association

Copper Development Association is an industry trade organization. Mr. Peters is aware of the Arizona State Capitol dome that was coated to keep its shine. To Mr. Peters' knowledge, this is the only current effort to maintain a copper roof shiny. Mr. Peters has seen descriptions of the Olympic Stadium in Mexico City (circa 1968) that was coated to keep its shine, but the roof is now weathered naturally to a green color. Mr. Peters has seen storefront usage of coatings to keep copper shiny, but does not know which coatings were used. Mr. Peters notes that if there is moisture in the vicinity of the copper, weathering starts immediately.

Mr. Peters is familiar with the product Incralac. It was originally solvent-based, but the manufacturer now has a water-based formulation. Mr. Peters has seen technical articles by a Julie Wolf, et al. of the The J. Paul Getty Museum, Los Angeles, CA, who has done much work in efforts to keep copper statuary from tarnishing. Mr. Peters describes a tarnish removal technique using acids (e.g., oxalic acid) with an abrasive. He also describes a technique called pickling using sulfuric acid and an abrasive. Mr. Peters cautions against cleaners flowing "downstream" and the need to neutralize the copper after the use of cleaners. Copper ions in the cleaning solution can flow over and react with masonry and other building materials. Some clean with household kitchenware cleaners such as Brasso (a mild acid and abrasive polishing compound).

Mr. Peters advises to clean and coat on the same day. On the subject of tarnish formation, Mr. Peters notes that shallow slopes weather more quickly because of the accumulation of atmospheric deposits and the greater dwell time of water/dew. If copper is allowed to brown, it is appropriate to coat with oils such as linseed oil and then wax to protect the oil; Mr. Peter notes that this is the usual treatment for sculptures. Mr. Peters expressed his opinion that the dome be allowed to weather naturally.

Mr. Peters notes that initial weathering can appear odd, even purple before a more stable tarnish develops. He has seen blotchy tarnish such as that in the Brown County dome photos we sent him. Knowing that boiled linseed was applied, Mr. Peters wonders whether variable application thickness and stickiness produced the tarnish that is visible in the photos. Mr. Peters described a CDA document for surface preparation on a smaller scale (i.e., smaller than a roof) that he will provide. Mr. Peters cautions to be careful not to damage the metal trying to clean it.

3.3 Teleconference with Teresa Sedmak, Everbrite, Inc.

Everbrite, Inc. is the manufacturer of the Everbrite coating. Ms. Sedmak advises to use abrasives to remove the existing tarnish, then clean with xylene and apply three coats of Everbrite at a total thickness of about 3 mils. The abrasive pads, such as Scotch-Brite, may need to be as fine as 2000 to 2500 "grit". When asked about the use of glass bead abrasive cleaning suggested by a contractor working with Brown County, Ms. Sedmak thinks this method may work well. Everbrite can be applied by brush, roller or spray equipment. Ms. Sedmak advises that the service life cannot be guaranteed because of variables (e.g., contractor performance, weather, maintenance) but with cleaning/re-coating in 1 to 3 yrs it can last up to 10 yrs. The coating on the Arizona State Capitol dome is 5 to 7 yrs old.

3.4 Teleconference with Scott Blair, Incralac

We note that Revere Copper and Common Sense describes Incralac as having over 30 yrs experience coating copper.

Mr. Blair advised that anything coated outdoors with Incralac will require regular maintenance. At best it will be 2 to 4 yrs before the coating needs to be cleaned and re-applied (not removed). Mr. Blair reports that he is working with conservation material scientists who are always coming up with new formulas. They are currently using DPTA (Pentetic acid or diethylenetriaminepentaacetic acid) as a cleaner with proper pH balance and surfactants to aid removal. The surface must then be rinsed with distilled water. DPTA is applied using cloths and then wiped off. The application of Incralac can be done between 60°F to 80°F and during low humidity conditions (humid air can cause fogging in Incralac or trap moisture under the coating). Mr. Blair advises use of the solvent-based formulation, not the water-based which can be applied using a brush, roller, or spray equipment. Spray application is best to get into undercuts and seams. If any of a seam is left exposed, it will corrode, but all the applicator needs to do in this case is simply reapply the area. It is sufficient to clean before reapplication unless the coating is delaminating or worn through. In this case, the product should be removed at such locations. Cleaning should consist of a damp cloth and wipe method with water, using isopropanol to degrease if needed. If the surface is very dirty, use a detergent, rinse and reapply. Apply three coats with a total thickness of about 1.5 mil thick. Incralac dries fast under conditions described. Try to apply coating within a day or two of cleaning. It is critical to get rid of moisture in seams. Mr. Blair cautions that run-off from DPTA will "stain" stones. Mr. Blair thinks that any qualified commercial painter can apply Incralac. Other coating formulas are like Incralac, but Incralac has

the greatest service life. Mr. Blair notes that fingerprints, sweat or other body oils on copper after cleaning will stand out as patina under coating, therefore, applicators should wear gloves. Mr. Blair advises that the service life of the Incralac product cannot be guaranteed.

3.5 Teleconference with Jack Kerins, Leslie Fox, and Rumya Venkateswaran - Peacock Laboratories, Inc.

Peacock Laboratories, Inc. is the maker of Permalac Clearcoat. We spoke with Jack Kerins, Leslie Fox, and Rumya Venkateswaran. Permalac is a clear acrylic coating with additives to improve the bond. The coating can last 8 to 10 yrs, but it should be recoated in 5 to 7 yrs. The existing boiled linseed oil on the Brown County dome must be removed. They suggest using aceitic acid, Braso, or a light vinegar cleaner, followed by a wash using a lot of water to remove the cleaner. They recommend a three-coat application by spray or roller, about 1.5 mil thick. Drying time is about 15 min. between spray-applied coats and 60 min. between roller-applied coats. The air temperature is not a significant issue because they adjust for temperature by the addition of a lacquer. Applicators are provided with a mix chart. Permalac is able to elongate as copper moves in thermal cycles. Permalac should be applied when humidity is low.

Permalac weathering is dependent on how much water run-off there is, and its exposure to abrasive atmospheric deposits, bird droppings, etc. Permalac is resistant to acid rain. Permalac is aware of the coated roof at the Copper Mountain Temple at the Odiyan Retreat Center in Cazadero, CA and numerous sculptures. The product is usually applied by painters. Permalac has a 10-yr limited warranty. If the product was used in accordance with the manufacturer's instructions, Permalac will supply additional Permalac to the original purchaser.

3.6 SGH Teleconference with Gordon Sorensen, Progressive Roofing

Progressive Roofing is the contractor who coated the Arizona Capitol Dome. The first product applied was Nyalic, a clear coating. The coating did not perform satisfactorily, possibly because of moisture trapped under the coating during application. Mr. Sorensen reports they cleaned the dome and then applied Everbrite. It has been 7 to 9 yrs, and some darkening is apparent. The surface must be cleaned twice annually to remove bird droppings.

3.7 Teleconference with Brown County

During one of our conversations you shared with us that the County and its consultant/contractor have explored options with a coating manufacturer, Everbrite, for cleaning and coating the copper dome. We understand that the consultant/contractor has developed a remedial plan for an access/staging method, cleaning (using glass beads), and coating with Everbrite, with an estimated cost of approximately $50,000 to implement the remedial plan.

4. ANALYSIS OF CLEANING AND COATING OPTIONS

Based on the meetings between SGH, Brown County and industry professionals, coating manufacturers, and consultants/contractors, as well as our review of the information described above, we provide below a summary of options for cleaning and coating the copper dome. Please note that we do not include boiled linseed oil as an option given that it has not performed satisfactorily for reasons that are not fully investigated at this point. Although Revere Copper and the Copper Development Association have communicated a preference to let nature take its course, we do not include this "do nothing" opinion as an option, as it is not responsive to the County's desire for a shiny copper finish.

Cleaning	Advantages	Disadvantages	Comments
TSP/water solution, followed by rinse clean water	• Least harmful to copper • Consistent with long published recommendations by Revere Copper • Will remove hardened thin film of linseed oil	• Will not remove black tarnish • May not remove thick film of hardened linseed oil • Must prevent run-off onto stone or other elements below to limit staining and potential damage • Will not create shiny surface	• Rinse with clean water is critical with any chemical cleaning to remove chemical deposits that can promote tarnishing
Acid (e.g., DPTA or oxalic) cleaner with pH balance and detergent/soap, followed by neutralizer and clean water wash	• May remove tarnish with limited abrasion • May limit need to polish to create shiny surface • Will remove hardened linseed oil	• Risk of damage to copper must be controlled • Must prevent run-off onto stone or other elements below to limit staining and potential damage • Must understand and implement environmental and worker protection • None of those we met with are highly specific on means and methods	• Chemical cleaning has been documented by statuary conservators but has not been developed for commercial roofing/painting
Abrasive followed by TSP/water solution wash and clean water rinse	• Will remove tarnish and hardened linseed oil • Consistent with long published recommendations by Revere Copper • Dry abrasion will limit risk of chemical contamination and further cleaning	• Abrasive removal will damage copper • Fine abrasives will be needed to polish sheet to satisfactory shine • Polishing aids (e.g., pastes) increase risk of chemical contamination • Non-metallic abrasives have been found to have minor quantities of metallic abrasive material that has the potential to damage the copper after coating	• Metal finishing by dry and wet abrasion is well established in other industries (household goods such as copper pots, auto repair of steel, plastic and aluminum) but not in copper roofing – techniques from these industries would need to be refined for the Dome
• Glass beads followed by TSP/water solution wash and clean water rinse	• Brown County appears to find the results satisfactory (i.e., removal of tarnish, limiting damage, and satisfactory shiny	• TSP/water solution wash and clean water rinse may not have been included in the contractor's proposal	• Abrasive cleaning using carefully controlled pressure, nozzle selection and spray pattern, and abrasive have been

Cleaning	Advantages	Disadvantages	Comments
	appearance) based on consultant's/contractor's representation/demonstration		found to be successful in cleaning delicate and historic building fabrics • Walnut shells, baking soda are other types of materials used on building fabrics for abrasive cleaning
Coating			
Everbrite	• Only known roofing application of a clear coating copper • Abrasive cleaning method described by manufacturer, although minimally described, is consistent with metal polishing technology	• Chemical cleaning with xylene must be managed with respect to environmental and worker safety hazards • Other cleaning methods mentioned by manufacture are not fully described • The contractor for the Arizona Dome reports darkening in 5 to 7 yrs, even with cleaning and weather conditions in Arizona (possibly more favorable to slow tarnish development compared to Green Bay)	• Weather conditions and time between cleaning and coating are critical for all coatings. • Manufacturer states 1 to 3 yrs between applications.
Incralac	• Longest apparent use in coating sheet copper	• No known roofing application of a clear coating on copper • Formulation changes described make track record less informative • Cleaning methods not fully described by manufacturer	• Weather conditions and time between cleaning and coating are critical for all coatings. • Manufacturer states 2 to 4 yrs between re-applications.
Permalac			• Weather conditions and time between cleaning and coating are critical for all coatings. • Manufacturer states 5 to 7 yrs between applications.

5. PATH FORWARD

As presented above, there are various options for cleaning and coating the copper Dome to address the appearance. The risk assessment summarized in the preceding section demonstrates that each option has its own advantages and disadvantages, and that no method is free of risks with respect to potential damage to the copper, susceptibility to the environment during application, maintenance demand, or the longevity of the goal of impeding surface oxidation to extend the clean, shiny red copper appearance.

Given the uncertainty and variability in the use and performance of coating products on exterior copper architectural features and the fact that each coating manufacturer has unique cleaning and application procedures, it is difficult to recommend that Brown County proceed with one of these cleaning and coating options over another. In an effort to better understand the County's risk tolerances with respect to the specifics of each cleaning and coating option, we recommend that SGH and Brown County continue to discuss these approaches.

Sincerely yours,

Matthew H. Johnson, P.E.
Principal
WI License No. 41789-6

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Fontecchio, Paul A.

From: Teresa Sedmak <teresa@everbritecoatings.com>
Sent: Wednesday, June 27, 2018 5:15 PM
To: Fontecchio, Paul A.
Cc: teresa@everbritecoatings.com
Subject: RE: Brown County Dome

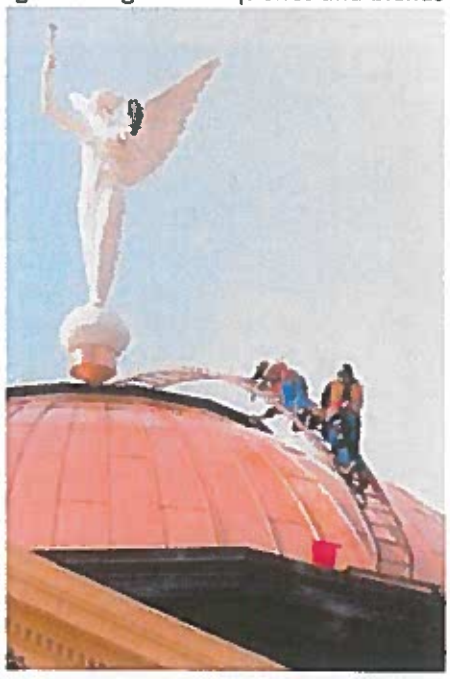
Hi Paul,

It was good to talk with you today about the Brown County dome.

The blackening due to oil use is an unfortunate situation that requires resolving. The decision of whether or not to keep the copper in its natural state allowing it to oxidize overtime or to coat the dome in order to seal and protect it preserving a newer copper look is a customer preference. Everbrite Coating is used to keep the copper color instead of allowing the copper to age. Either way, the uneven black staining will need to be removed in order to create a consistent and even coloring without the dark swirls and problems that the oil has caused.

Everbrite has been used to protect copper from tarnishing for many years. Everbrite, Inc. has been in business for over 25 years and was incorporated in 1994. Our sole business is to provide materials to restore, seal and protect metals.

Everbrite is a clear, protective coating that is a blend of polymer resins in a solvent base with UV blockers and Anti-Oxidants to prevent tarnish, corrosion, fading and oxidation. The Everbrite coating can be maintained indefinitely by recoating periodically. The length of time between recoating's depends on the substrate and the conditions that the substrate is exposed to. In many cases, like the AZ State house dome and the AON building in Los Angeles, after 10 years the coating shows no sign of wear or degradation. (Please see pictures below.) Everbrite is self-annealing meaning that it liquefies and blends to itself. Cross-linked or catalyzed coatings do not have this unique property. The benefit to a self-annealing coating is that it can be repaired. If a bad storm came through and damaged the coating, the Everbrite could be reapplied over the damaged area and would blend to itself. Everbrite is not a lacquer that will yellow or amber with time. It will remain clear throughout its life. The dry film coating of Everbrite will remain flexible so it will expand and contract with the heat and the cold along with the copper.

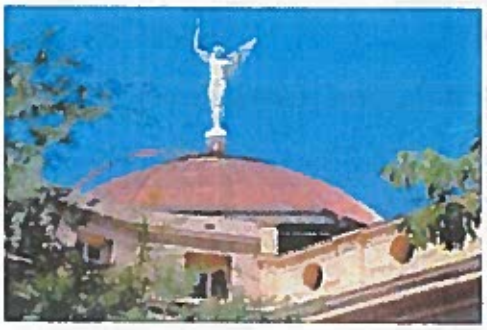


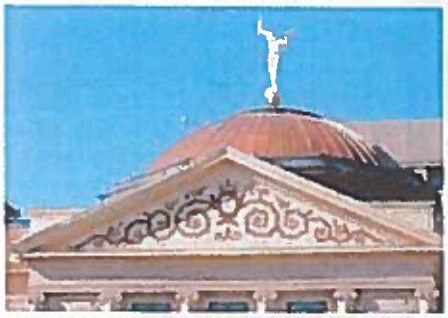
The copper dome of the Arizona State House was coated in 2012 and remains beautifully copper. Here is a picture of the copper dome while it was being restored. There are many more recent pictures on the internet of the dome that shows the copper color and finish. I am trying to have someone go take a picture or two for me. We receive several weekly orders for copper cleaning and restoration products; our customers clean and restore copper roofs and cupolas as well as domes and church steeples.

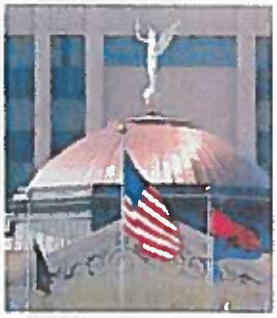
Here are some more recent pictures from the internet that show the dome.

This is an overhead picture of the dome that was taken in 2018. Please note the 2018 imagery by Google in the corner.

There are many recent pictures of the dome online:

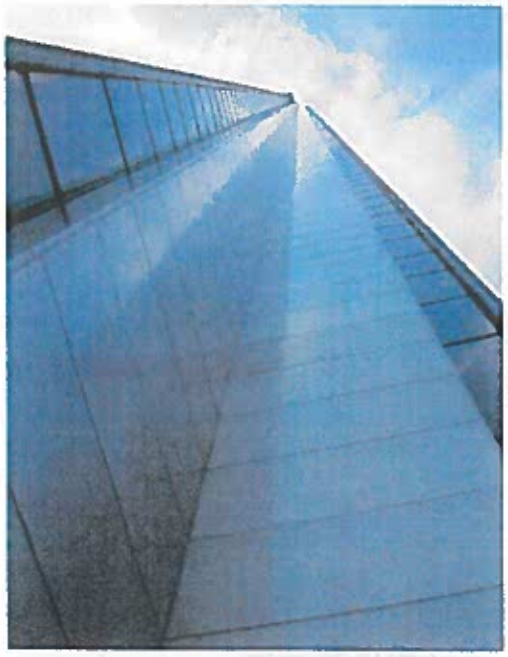


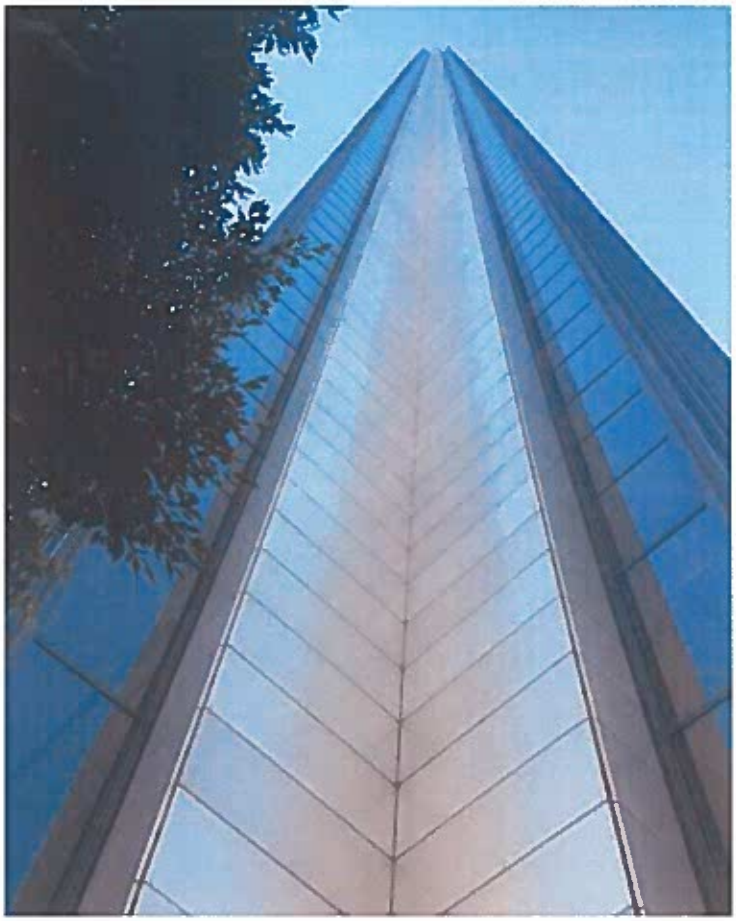



Another project that we discussed is the AON building in Los Angeles. In 2008, the clear, anodized crown and corners of the building were restored and coated with Everbrite. Los Angeles has much more pollution than Phoenix where the dome is and the coating is standing up very well to the elements still.

Here is a picture of the building after it was coated in 2008:



Here is a picture that was taken in 2017 after 9 years of exposure to the elements and to the pollution of downtown Los Angeles.



I hope this information helps. I will be happy to work with you to get your dome looking as it should, regardless of if you use Everbrite to keep it copper or let it go brown.

Please let me know if you have any questions.

Looking forward to working with you,

My best,

Teresa
Teresa Sedmak
President
Everbrite, Inc.
916-852-0200