

March 6, 2022

BY EMAIL

Duane Thomas, MUTCD Team Member
Federal Highway Administration
Duane.Thomas@dot.gov

Re: Request to Revoke RRFB Interim Approval

Dear Duane Thomas,

Rectangular Rapid Flashing Beacons were given approval by the Federal Highway Administration in the Manual of Uniform Traffic Control Devices in 2003. The FHWA eventually terminated that approval on December 21, 2017, due to patent issues.¹ On March 18 2018, the interim approval was restored because Carmanah waived its patent rights.²

The only study of RRFBs was performed by Kay Fitzpatrick of the University of Texas Transportation Institute. The main area of focus of the study was whether drivers stopped for pedestrians. The study did not state measure the amount of eye damage, the amount of distraction, the amount of neurological trauma, or the use of RRFBs in the presence of other RRFBs or flashing lights.

There are now two types of light sources: point sources and surface sources. The brightness of point sources is measured with luminous intensity in candela. The brightness of surface sources is measured with luminance in nits (candela per square meter). As can be seen in the RRFB study, Ms. Fitzpatrick used the wrong brightness metric when studying the LED RRFB.³ Ms. Fitzpatrick treated the RRFB as a point source, even though it is a surface source, resulting in invalid data. Due to this critical error, the entire study must be voided.

RRFB standards for Rectangular Rapid Flashing Beacon. The rapid flashes are a source of neurological trauma for LED-sensitive persons, resulting in epileptic seizures, migraines, panic attacks, agitation, Complex PTSD, nausea, and similar reactions. Ms. Fitzpatrick did not study the effects of RRFBs on those with light-sensitivity disabilities. Because the intense, rapidly flashing light interferes with nerve functioning, creates barriers to access, and interferes with major life functions such as seeing, thinking, and concentrating, RRFBs do not comply with the Americans with Disabilities Act and are discriminatory.

¹ https://mutcd.fhwa.dot.gov/res-interim_approvals.htm

² https://mutcd.fhwa.dot.gov/resources/interim_approval/ia21/index.htm

³ <https://www.fhwa.dot.gov/publications/research/safety/16040/003.cfm#toc455143228>

One of the most tragic outcomes of using LED light beams is its effects on those who are LED-sensitive. This includes people with epilepsy, autism, migraines, PTSD, and other neurological conditions where the non-uniform energies of the LED light beams cause the nerves to overload and short circuit, resulting in epileptic seizures, migraines, panic attacks, anxiety, and agitation. Some of these heart-wrenching stories are posted on our website.⁴ Here are a few quotes:

- **Epilepsy:** *I have epilepsy, and even the briefest glimpse of an LED light instantly throws me into a seizure."*
- **Migraines:** *The most distressing symptom from these [LEDs] is a burning sensation in the occipital area of my brain.*
- **Autism:** *I was crawling around on the ground, pulling the grass, pulling my hair, screaming.*
- **Lupus:** *I developed a sunburn-type rash to my face, neck, and chest with spontaneous bleeding to my lip.*
- **Irlen's Syndrome:** *Walking in the dark is horrendous because of these lights.*
- **Sjogren's Syndrome:** *Strobing LED lights are becoming so common on utility vehicles, and they cause me to go into a completely overloaded state where I can't think straight.*

The cities of Ashland, Oregon and Little Canada, Minnesota have installed RRFBs via the state approval given by the FHWA. These RRFBs have injured two of our members, Mark Baker in Ashland, Oregon, and Heidi O'Leary in Little Canada, Minnesota. The Soft Lights Foundation has contacted the Public Works Directors of each city to request removal of these dangerous devices, but our requests were denied. Scott Fleury, Interim Public Works Director of Ashland, Oregon, explicitly directed us to contact the federal government. Bill Dircks, Public Works Director of Little Canada, Minnesota, has stopped responding to our requests.

As per Amnesty International, torture is when somebody in an official capacity inflicts severe mental or physical pain or suffering on somebody else for a specific purpose.⁵ There can be no doubt that the intent of the city officials is to inflict mental suffering on the public for the purpose of making them stop their car. While there are many ways to warn drivers of a pedestrian crossing, the RRFB is purposely designed to inflict mental harm by using high luminance, rapidly flashing light which is a well-known torture technique.

Mr. Baker has been diagnosed with Autism Spectrum Disorder. When he is exposed to rapidly flashing LED lights, he may suffer a panic attack resulting in screaming, pulling hair, and loss of situational awareness. When assaulted by flashing LED light, Mr. Baker is forced to close his eyes, or look into his lap and if he is driving, Mr. Baker is forced to stop the car. As noted earlier, the assault by RRFBs is no less than torture by public officials.

Ms. O'Leary has been diagnosed with epilepsy. Ms. O'Leary has been injured by the RRFBs because they caused her to suffer pre-seizure symptoms and she now continues to suffer the traumatic after-effects of her experience(s). As noted in a recent study by the Epilepsy Foundation, people with epilepsy exposed to flashes brighter than 20 candelas/m² at 3-60 (particularly 15-20) Hz occupying at

⁴ <http://www.softlights.org/stories>

⁵ <https://www.amnesty.org/en/what-we-do/torture/>

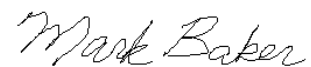
least 10 to 25% of the visual field are a risk.⁶ Notice that the study author correctly uses luminance measured in nits (cd/m²) to rate the brightness of the flashes. This study confirms that it is highly irresponsible and negligent to shine rapidly flashing, high luminance light at people who have epilepsy. Any agency that uses RRFBs is guilty of reckless endangerment, discrimination, and torture.

To summarize:

- 1) Researcher Kay Fitzpatrick used the wrong metric for brightness in her study of RRFBs, thus invalidating the entire study.
- 2) RRFBs are discriminatory and violate the Americans with Disabilities Act because they create barriers to public access, and interfere with major life functions such as seeing, thinking, and concentrating. The FHWA failed to collaborate with the US Access Board to ensure that RRFBs do not discriminate prior to granting interim approval.
- 3) RRFBs likely cause eye damage due to the high peak radiance of the LEDs. It is unknown how much eye damage they cause per flash, but we do know that this damage is cumulative.
- 4) RRFBs have caused and continue to cause injury.
- 5) No study has shown RRFBs to be safe.

Due to the high risk of injury or death from RRFBs, this situation is urgent. We request that the FHWA immediately revoke the authorization of use of RRFBs for the states of Oregon and Minnesota.

Sincerely,



Mark Baker
President

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⁶ <https://onlinelibrary.wiley.com/doi/10.1111/epi.17175>