Evolutionary Markings, Inc.

April 19, 2021

Comments of Evolutionary Markings, Inc.

RE: Docket No. FHWA-2020-0001, RIN 2125-AF85, National Standards for Traffic Control Devices; the Manual on Uniform Traffic Control Devices for Streets and Highways; Revision

AGENCY: Federal Highway Administration (FHWA), U.S. Department of Transportation (DOT).

ACTION: Proposed Rule; Notice of Proposed Amendments.

Evolutionary Markings, Inc. ("EMI") respectfully submits these comments in response to the Notice of Proposed Amendments (NPA) in this docket, published at 23 CFR Parts 470, 635, and 655.

EMI is a small business incorporated in Idaho in 2014 to develop next generation marker technology to greatly improve visibility and highway safety. Our mission statement from the beginning has been to "develop new, and improve existing, highway marking products to save lives of families and friends around the world." EMI's founders formed EMI because they recognized that transformative solutions would be needed with the advent of new technologies. EMI's products have the capability to integrate wireless communication and connectivity into grid or solar powered, battery operated, LED lighted markers (smart markers) or light strips. Real time responsive, smart markers or light strips with communication capabilities did not exist until they were invented by EMI.

EMI's comments relate to our experience as an innovator of patented advances in transportation technology with the promise of benefiting public safety and maximizing the efficiency of traffic operations. EMI smart markers or light strips show promise of providing additional, dramatic, life-saving improvements over existing practices. That is why the Idaho Transportation Department (ITD) submitted an official request for MUTCD experimentation of our company's wrong way safety products. Wrong-way crashes are considered the most serious type of traffic collision because of their head-on nature and are often caused by impaired or confused drivers. However, ITD was prohibited by FHWA from testing and deploying our company's transportation safety advancements, because of FHWA's regulatory ban upon patented and proprietary products.

The NPA does include proposed MUTCD regulations pertaining to patented and proprietary products and we commend FHWA for opening these issues for public comment. However, we were disappointed to see in the NPA that FHWA proposes to continue to needlessly elevate form over substance and prohibit the use of patented and proprietary products unless patent rights are given away–even if the product will improve safety. This is clearly contrary to the public interest in safety and in innovation. In these comments we will explain these points more fully and ask for the final wording of the MUTCD in this docket to reverse the FHWA's badly outdated policy and allow patented products that are in accord with other requirements of the MUTCD.

Historically, the MUTCD is only updated by FHWA about once every decade (11+ years since the last revision in 2009). Given that historical timeline, these changes will become embedded policy and may continue in regulatory effect until the next edition of the MUTCD in approximately 2030. EMI's comments will address the long-lasting consequences that will result if the NPA's proposed and expanded MUTCD restrictions on proprietary and patented products are adopted without modification.

More Frequent MUTCD Updates

The historical practice of reviewing the MUTCD about once every decade should be changed given the pace that technology is advancing. Increasing the frequency of the MUTCD review process would keep the MUTCD more current and updated, providing for greater public input in these rapidly changing times.

Inclusive Determination of Uniformity

Under current MUTCD Section 1A.03 and the proposed NPA, the FHWA has the responsibility and authority to determine uniformity of appearance and characteristics of traffic control devices, including size, shape, color, composition, lighting or retroreflection, message characteristics, placement, installation, operation, maintenance, etc. Under existing Section 1D.03, and Section 1A.06 the proposed NPA, "Uniformity means treating similar situations in a similar way."

To accomplish this purpose, most MUTCD regulations pertain to the uniformity specifications required for the standardization of traffic control devices to fulfill the standardization purpose of the MUTCD. However, an incongruity arises for patented and proprietary products because they are specifically excluded and preempted from any actual uniformity determination by MUTCD regulation before there is any actual determination of uniformity. FWHA's policy and view is that patent protections for traffic control devices are, by regulatory definition, universally inconsistent with uniformity under the MUTCD, no matter what the facts reveal. Therefore, promising opportunities to improve safety and transform transportation technology by the testing and use of innovative products that are patented or proprietary will never be considered by FHWA ever.

The current 2009 version of the MUTCD summarily addresses this prohibition on patent and proprietary protections in two concise sentences in paragraph 04 of the MUTCD Introduction. It is unknown whether any history exists to determine whether these two sentences in the existing MUTCD introduction originated from the century-old, outdated, and obsolete procurement rule that was recently rescinded by FHWA which pre-dated the MUTCD.[1] If so, this would be the appropriate time for the restrictions on patented and proprietary products to be eliminated from the MUTCD. Elimination of the FHWA's ban would be the best alternative for the MUTCD for all the reasons recognized by the FHWA when it rescinded the rule.

"Eliminating regulatory barriers fosters and accelerates innovation in the future" according to FHWA's own findings when it rescinded and repealed its antiquated procurement rule effective October 28, 2019. In its Executive Summary repealing the Rule, FHWA stated: "The FHWA is revising its regulations at 23 CFR 635.411 to provide greater flexibility for States to use patented or proprietary materials in Federal-aid highway projects. Based on a century-old Federal requirement, the outdated requirements in 23 CFR 635.411(a)-(e) are being rescinded to encourage innovation in the development of highway transportation technology and methods."[2] Prevailing factors considered by FHWA centered on four primary reasons related to promoting innovation under Option 2 (which proposed to rescind the patent and proprietary materials restrictions): *"(1) Option 2 would eliminate the existing regulation, which is a barrier to innovation; (2) Option 2 would best foster and accelerate innovation in the future; (3) Option 2 encourages innovation that may improve transportation systems relating to: (a) safety; (b) quality, resilience, performance, durability, and service life of transportation facilities; (c) efficiency and cost-effectiveness of repairs, treatment, maintenance, preservation, rehabilitation, reconstruction, or replacement of highway facilities; (d) minimizing congestion; and (e) implementing autonomous vehicle (AV) technology; and (4) Option 2 would best fulfill the Federal Government's important role in supporting research and development leading to improvements in highway transportation technology."*[3]

If FHWA believes that the elimination of the MUTCD ban on patented and proprietary products would not be appropriate, then at least change is warranted. Under current MUTCD Section 1A.10, some testing of

[1] See 84 FR 51023
[2] See 84 FR 51023
[3] See 84 FR 51024

patented devices may be allowed, but the request for experimentation must include a legally binding statement that the "concept" of the traffic control device is not protected by a patent or copyright. There is no definition of what constitutes the "concept" of the traffic control device and that creates a problem. In our case, the FHWA did not recognize this concept rationale when it denied ITD's official request to experimentally test EMI's plug and play safety-component products even though EMI did not patent the concept of a wrong way warning system. That resulted in unintended consequences. What happened then is that an infringing product (knockoff), with no patent protection, was apparently eligible for experimentation because it was not patented. While we do not believe this consequence was the intent of FHWA, it exemplifies one of the challenges of current FHWA patent prohibition policies, which now punish the legitimate inventor and reward the infringing party. This is not a hypothetical problem. It happened to our company.

Therefore, change is overdue and now is the time to implement a more inclusive MUTCD policy for patented and proprietary products. Adopting a MUTCD policy that permits a DOT/transportation agency and patent holder to be eligible to participate in the experimentation process, while working in concert with the FHWA, to assure uniformity compliance would be the better approach. Instead, FHWA seeks to expand its restrictions upon patented and proprietary products under its proposed NPA revisions to the MUTCD.

New proposed Section 1B.06 requires the manufacturer and/or developer of the device, and the supplier of the device, to sign a legally binding statement certifying that the traffic control device is not protected by a patent, trademark, or copyright, and that the traffic control device is in the public domain and may be used freely in traffic control device design and application without infringement or claim of trade secret misappropriation.

Proposed MUTCD Section 1D.08, contains a blanket prohibition against patented traffic control devices and states that they will not be eligible for experimental testing or interim approval, unless patent rights are expressly abandoned. New proposed Section 1D.08 also seeks to introduce and incorporate a new "message concept" into the MUTCD. For the first time, the message that the device conveys to the road user is the definitive factor FHWA proposes. Under this concept, if a patent covers the device's communication to the road user by virtue of its appearance, audible message, or other aspects of the message conveyed, then the device is *"considered"* to be protected and not in the public domain. By regulatory edict, such a device is then precluded from inclusion in the MUTCD. FHWA states "the purpose of this limitation according to FHWA reasoning is to ensure uniformity of the messaging of individually approved traffic control devices."[4] In further introducing its new message concept for regulation, FHWA does propose to allow the use of other aspects of a device (e.g., internal controls, circuitry, electronics, mechanics, housing, etc.) so long as the appearance, audible message, or other aspects of the message conveyed, including the manner of conveyance, remain freely reproducible by all without infringing on any proprietary rights or interests.

While this new message concept may appear at first blush to be a compromise or concession, it is simply a conceptual creation by FHWA that is not adequate and makes little sense upon closer scrutiny. Internal aspects of devices are generally "prior art" under US patent laws, meaning they are not patentable. From an inventor's perspective, there would be little business incentive to expend the time, talent, and money to invent internal components to be used by others, because there would be little chance for the recovery of costs or any viable path to monetize profits. As a practical matter, how would an inventor be able to determine which traffic control devices are using their internal components or infringing upon patented internal components? In the real world, safety improvements and transportation technology advancements must include all traffic control devices. The FHWA's proposed change essentially excludes the private sector from future development and implementation of transformative transportation technologies and public safety solutions. This is clearly contrary to public interest in safety and in innovation.

Section 1D.08, as proposed, perpetuates and expands FHWA's regulatory policy against patents and proprietary products. FHWA summarily does this by regulatory edict, rather than any factual determination concerning the actual uniformity of the patented device based upon the acquisition and evaluation of

[4] See proposed NPA Support paragraph for MUTCD Section 1D.08 Public Domain, Copyrights, and Patents

supporting data, characteristics, and functionality of new technology and products. Instead, a MUTCD change that permits both the agency and patent holder to participate in the MUTCD process and work together with the FHWA to assure the uniformity of messaging would be more meaningful.

Rather than promoting an exclusionary and restrictive MUTCD policy, adopting an inclusive policy that permits DOT/transportation agencies and patent holders to be eligible to participate in the experimentation process, while working in concert with the FHWA, would assure the uniformity of messaging that is so critical to instant recognition and immediate response by the road user. With FHWA guidance and experimental testing results obtained from MUTCD experimentation, the most effective "message" would be determined. Testing is always necessary for the acquisition and evaluation of supporting data, characteristics, and functionality of new technology and products. Utilizing the data obtained from state DOT testing would enable the FHWA to determine uniform specifications, brightness, quantities, colors, deployment configurations, etc. of new innovative products. In the case of patented products, this inclusive process will assure uniformity, because the patent holder (and all its licensees by License Agreement terms) would be subject to the standards imposed by FHWA for approval for MUTCD interim use after successful completion of official experimental testing.

Promote Safety Advancement with Uniformity Compliance

While the policy of promoting "uniformity" is important, so is promoting "safety". Safety is the highest priority according to USDOT.[5] Including safety as the highest priority in the MUTCD would result in both safety and uniformity being considered when formulating FHWA policy. This not only would align FHWA policy with USDOT policy, but also it would reduce the number of individuals injured and killed because of transportation by redirecting FHWA policy to consider safety advances offered by all new and innovative technology in traffic control devices in addition to uniformity. This important change could be implemented by modifying the enumerated objectives in proposed Section 1A.01 entitled The Purpose of the MUTCD, by adding a new subpart A (as the first subpart), thereby recognizing safety as an important policy of the MUTCD together with uniformity. That would provide a logical rationale and justification for FHWA to reconsider its restrictive policy prohibiting the testing and deployment of patented and proprietary products in America's roadways. Appropriate changes could then be made to proposed sections like Section 1B.06 Experimentation, Section 1D.08 Public Domain, Copyrights and Patents and other related sections, so that patented and proprietary products advancing safety would be eligible for experimental testing, interim approval, and official rulemaking by FHWA under the MUTCD.

Promote Innovation and Technology Advancement with Safety and Uniformity

Collectively, the FHWA's proposed changes to the MUTCD pertaining to patented and proprietary products create regulatory roadblocks to safety advances in America's roadways, by mandating that patent holders abandon their patent protections and allow anyone to use their intellectual property for free. Private sector development will simply not be undertaken on a charitable contribution basis.

The NPA revisions to the MUTCD being proposed by FHWA severely limits or excludes the private sector from future development and implementation of transformative transportation technologies and public safety solutions. This means new transportation technology and safety innovation in the future will mostly be limited to specific federal and publicly funded projects, such as SBIR grants, under the FHWA's proposed MUTCD revisions.

Private enterprise and American small business should be incentivized to innovate safety solutions, rather than deterred. Lawful patent protections[6] provide companies with a limited opportunity to recapture their significant investment. There are significant outlays of time and money required to research and develop new transportation technologies. Often a combination of self-funding, venture capital, equity participation and loans are required for private stakeholders to be able to fund these associated capital outlays. There are also

[5] Safety Overview contained in USDOT's website at Safety and Health | US Department of Transportation
[6] See Article 1, Section 8, of the US Constitution, Title 35 of the U.S. Code.

countless risks, as evidenced by the failure rate for entrepreneurial startup companies and our company's own experiences. Requiring an "express abandonment" of any and all forms of proprietary protection, such as patents, essentially requires many innovators to commit business suicide as a FHWA imposed condition to deploying their products in America's roadways. Innovators are forced to waive the protections afforded to them under U.S. patent laws and open the doors for other competitors/China (often more established and better capitalized) to reverse engineer their proprietary technology to produce unauthorized knockoffs or simply mass produce their inventions ("the big fish eat the little fish").

Our small business company is proof of the negative effect that regulatory barriers have upon transportation safety innovations. FHWA's imposed ban upon the experimental testing and use of our patented safety inventions has created an insurmountable regulatory roadblock that is impossible to overcome. A more considered approach would be to weigh and balance all the benefits, costs and MUTCD compliance issues based upon facts and information obtained from experimentation and testing, rather than imposing an inflexible barrier to innovative safety products that are patented or proprietary.

Cost Effectiveness and Marketplace Efficiencies

FHWA promulgation of alternative MUTCD regulations to replace proposed 1B.06, 1D.08 and other applicable sections to allow the testing and deployment of patented traffic control devices that comply with uniformity standards would not result in market inefficiencies or excessive costs. In many cases, patented and proprietary products are not only are cost effective, but they also advance transportation efficiencies.

State DOTs and other transportation authorities are very capable and experienced at making prudent decisions concerning cost effectiveness. They do it every day. FHWA recognized this when it repealed its 23 CFR 635 rule that prevented the use of patented and proprietary products to encourage innovation in transportation technology and provide greater flexibility for states to use these products, stating: *"It is important to note that this final rule does not require States to use proprietary products, and FHWA believes that States would not choose to do so unless there are benefits that exceed the costs associated with the use of such products. States, as rational market actors, are best situated to make this determination on a case-by-case basis as they consider whether a proprietary product would fit a specific programmatic need."*[7] Quite simply, if the patented and proprietary products are not cost-competitive compared to other alternatives or the benefits sought to be gained do not justify the costs, then required agency cost-benefit analysis will typically exclude their use in a project on the grounds they are not cost effective.

It is common practice for patent holders to license their Intellectual Property and inventions for manufacture by other interested parties. The royalty fees for such licenses are negotiable. However, if the royalty fee to be assessed under the license is too high, the licensee will not be able to make a profit. Licensees will not enter into license agreements unless they are profitable. For this reason, royalty fees in license agreements must be competitive and make good business sense in the industry to be viable.

Conclusion

Public interest in safety and innovation is not being advanced under the NPA revisions proposed by FHWA that continue to ban MUTCD testing and use of patented and proprietary products-even if the products will improve safety. Section 1A.01 should be revised to recognize safety as an important policy of the MUTCD, together with uniformity. FHWA policy under the MUTCD should be aligned with the USDOT's policy of advancing safety as the highest priority for transportation.

A mandated abandonment and forfeiture of patent rights as proposed by FHWA under its MUTCD revisions in this docket is not a viable solution, because it imposes a rigid, outdated, and exclusionary policy that universally bans most patented and proprietary products, while ignoring safety advancements, technological innovations and other considerations that are also critically important. The applicable MUTCD revisions proposed by FHWA (including sections1B.06 and 1D.08) should be replaced or revised to incorporate a more

[7] 84 FR 51026

with uniformity. FHWA policy under the MUTCD should be aligned with the USDOT's policy of advancing safety as the highest priority for transportation.

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