STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION
TRANSPORTATION DIVISION / RAIL SAFETY SECTION

Brian Vercruysse ***Rail Safety Program Administrator***

May 13, 2021

Ms. Stephanie Pollack
Acting Administrator
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Ms. Pollack:

Attached please find comments from the Illinois Commerce Commission (ICC) on the proposed rule for the 11th Edition of the National Manual on Uniform Traffic Control Devices. The ICC has reviewed the language of the Notice of Proposed Amendments (NPA) and the proposed MUTCD text, figures, and tables to develop the attached comments and revisions.

We appreciate the FHWA extending the comment period to May 14. This extension allowed us to further coordinate with other local and state agencies to develop a more statewide perspective of potential concerns as well as support for the proposed rule.

Thank you for the efforts the FHWA has put towards the new manual and for your consideration of our comments.

Very truly yours,

Brian Vercruysse

Brian Vercruysse
Rail Safety Program Administrator

Attachments

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Comments on Docket No. FHWA-2020-0001 National Standards for Traffic Control Devices; the *Manual on Uniform Traffic Control Devices for Streets and Highways*; Revision

Please use this form to provide comments on the Notice of Proposed Amendments for the MUTCD.

INSTRUCTIONS:

1. Add your name or organization name where indicted in the footer of this form.
2. Use Table 1 to provide your original comments.
3. Use Table 2 to indicate your agreement with a comment that another commenter has submitted to the docket.
4. Do not adjust formatting of the rows and columns; text will automatically wrap and expand the row height as you type.
5. To add rows to this form, use the "Insert Rows" function, or hover just outside the left edge of the row below which you would like to add a row and click the encircled "+" that appears.
6. If you choose to provide a letter to accompany this comment form, please **print the document as a PDF**; **please do not scan a hard copy**. This will assist FHWA with cataloging your comments.

TABLE 1. ORIGINAL COMMENTS ON PROPOSED CHANGES. Please indicate the applicable proposed Section numbers in the far-left column. In the next three columns, please indicate your agreement, disagreement, or whether the column is applicable to your response by placing a, "YES," "NO," or "N/A" in the appropriate column of the row. If you agree with a proposed change, then there is no need to fill out the additional columns beyond the first two. However, it can be helpful to explain why you agree with a proposed change based on your objective experience as a roadway operator and/or empirical data. If you disagree in part or in whole, then please provide additional information that FHWA may find helpful.

Proposed Section Number(s)	Agree with concept and text as proposed	Agree with concept; suggested rewording of text in Comments	Disagree with concept	Comments *Please include justification for your position based on objective experience and empirical data. If there is a specific statement with which you take exception, please provide the Page and Line numbers from the mark-up version of the proposed MUTCD text.*
Table 1B-1 (8B.16)	No	N/A	Yes	The proposed changes to section 8B.16 only add additional guidance and support. We do not believe it is appropriate to have a compliance date for an item that has no clearly defined guidelines to follow. The guidance and support in this section provide some vague information on identifying high profile crossings, but without clearly established standards, it is not always apparent if a crossing would be considered high profile. Furthermore, the evaluation of low ground clearance crossings is an ongoing process. Grades at crossings continue to evolve and change, especially due to rail resurfacing in which railroads often raise the track profile. This is a process that essentially is never complete and therefore, a compliance date is not appropriate. Please also, see our comments that pertain specifically to section 8B.16.
Table 1B-1 (8D.10 through 8D.13)	No	N/A	Yes	This is a rather broad and general category with a multitude of proposed changes. This specific provision indicates the "Determination and installation of appropriate treatment." While there are considerable proposed changes to each of these sections, preemption, movement prohibition, pre-signals and queue cutter signals are not new items in the MUTCD. Therefore, the way this provision is specifically written, indicating that a determination and installation of these devices should be completed within a 10-year period, is not appropriate. Furthermore, the use of pre-signals and queue cutter signals is not a requirement. Pre-signals in some instances should be considered and queue cutter signals may be installed. It is not appropriate to have a compliance date for the installation of devices that are not even required. Rather, a revised

				provision that indicates modifications or updates to these types of devices. when used, may be more appropriate. Illinois has completed considerable improvements at interconnected locations over the last 25 years. Over 300 million dollars (early in the process) has been invested and we have ongoing efforts to continue making improvements with even greater investment. We suspect that many other states that did not have as much focus on interconnect improvements over the past years may have difficulty with a 10-year compliance date. Not only was this a long and arduous task but required a considerable amount of funding.
4F.19	No	N/A	Yes	Pg. 460 of 781 Lines 11-12: We disagree with this added statement indicating that backup power should provide for a minimum operating period to allow for alternate traffic control measures and it should be deleted. It is unclear what alternative traffic control measures mean and it can create liability concerns. Furthermore, this is inconsistent with language in Section 8D.02 with respect to battery/stand-by power for railroad flashing signals. In that section, there is no provision or requirement for batteries to operate for a certain period to allow for alternate traffic control measures. It could be argued, in the case of railroad flashers, that it is much more safety critical to have such a requirement. At locations with railroad flashers, especially at locations without gates, if power fails and the batteries are depleted, there will be no indication to motorists that a train approaches (activation failure).
Part 8	No	N/A	Yes	These comments apply to section 8A.03, specifically to the proposed change to the standard pertaining to diagnostic teams. In addition, throughout the entire Part 8, there are multiple instances where references are made to a diagnostic team, in which these comments would also apply. The proposed language is in direct conflict with Illinois law, as well as other state's laws. In Illinois, specifically, 625 ILCS 5/18c-7401 establishes the Illinois Commerce Commission (ICC) with authority to prescribe new grade crossing traffic control systems or changes to existing traffic control systems. No changes may be made to existing traffic control systems without obtaining prior approval from the ICC. This authority also extends to traffic controls signals installed at highway intersections that are interconnected with railroad warning devices and it applies to both the design and operation of those systems. This authority is independent of any determination made by a diagnostic team. The ICC rules and regulations provide all parties a mechanism to resolve disagreements. The proposed changes state that a diagnostic team shall reach a determination on new traffic control systems and on proposed changes to existing ones. It also states that for operational changes, engineering judgment or an engineering study shall be conducted and approved by a diagnostic team. The diagnostic team does not have this authority, nor does the FHWA. The FHWA does not have the authority to preempt state laws and reassign this authority within the confines of an updated version of the MUTCD. This authority is established under state laws with responsibility placed upon the appropriate public entity. See FRA's Compilation of State Laws and Regulations Affecting Highway-Rail Grade Crossings, 6th Edition.

				With that said, we are generally not opposed to the diagnostic review process. Although, within the proposed revisions to the MUTCD, there are numerous references to diagnostic teams in various sections related to specific items relatively minor in nature that do not warrant assembly of a diagnostic team. We do believe the diagnostic review process can provide benefit in that it allows all interested parties to provide input and recommendations. However, it has been our experience in many cases, that a consensus amongst parties cannot be reached. The proposed language regarding the diagnostic teams must be changed from standard to guidance to eliminate conflicts with state statutes. Furthermore, only a single reference to the diagnostic team process should be provided in Section 8A.03, without countless repetitions in subsequent sections.
8A.01	No	N/A	Yes	Why are private crossings open to public travel being excluded from MUTCD requirements? The current version of the MUTCD includes these types of crossings. Some states have regulatory authority over private crossings, and this may be contrary to those State's laws. Proposed Section 1B.01 also pertains to this issue. Section 1B.01 indicates that the MUTCD shall apply to private roadways open to public travel which is inconsistent if it does not apply to a grade crossing on such a roadway.
8A.05	No	N/A	Yes	Pg. 684 of 781 Lines 13-17: This Standard statement should remain guidance and remain a "should" condition. The proposal to change this to a standard is too far reaching and too much authority is given to the diagnostic team. Please see our general comment pertaining to diagnostic teams for the entire Part 8. Furthermore, as a shall condition, it is somewhat in conflict with the option statement under section 8A.03, which allows minor operation changes to be made without a diagnostic team. The term "traffic control system" is all encompassing, including items such as, advance warning signs. pavement markings and active warning devices. A minor change, such as, the addition of an advance warning sign should not require assemblage of a diagnostic team. We suggest the following language: The appropriate traffic control system to be used at a grade crossing should be determined by an engineering study evaluated by a diagnostic team involving the highway agency with jurisdiction, the regulatory agency with statutory authority (if applicable), and the railroad company and/or transit agency (as applicable).
8A.05	N/A	Yes	No	Pg. 684 of 781 Line 24: “Maximum allowable train speeds” should be added as an additional factor. Variable train speeds is not the same factor, but rather indicates a crossing that has a high occurrence of trains operation at different speeds.
8A.06	N/A	Yes	No	Pg. 685 of 781 Lines 1-4: The reference to a diagnostic team should be deleted from this paragraph. Recommend revising to, "...to discourage road users from driving around a lowered gate, the length of the vehicle queues that typically form on the approach to the grade crossing should be considered when determining..." A roadway improvement project that may be in early stages of preliminary engineering, when various roadway geometric options are under consideration and capacity analyses are being

				completed, a diagnostic team typically is not yet involved. This guidance should apply even without diagnostic team involvement.
8A.06	N/A	Yes	No	Pg. 685 of 781 Lines 8-9: If railroad gates are present, consideration should also be given to extending the gates into the area with yellow diagonal markings. There are many existing grade crossing locations that currently have flush medians (yellow diagonal markings). It is an important consideration, to allow for the installation of longer gates to better close off the area to motorists. Otherwise, it could leave a considerable gap within the crossing area, providing an opening for motorists to easily circumvent the gates.
8A.07	N/A	Yes	No	For a concept that is not all that complicated, the supporting description sure is. An example figure or two, especially for a multi-lane approach with a skewed crossing angle, would greatly increase the clarity of this section.
8A.07	N/A	Yes	No	Pg. 685 if 781 Lines 32-35: The reference to a diagnostic team should be deleted from this paragraph. The diagnostic team typically does not calculate or determine, as a team, queue start-up and clearance times. The team may evaluate those times, but usually are determined by an individual, and in many cases, prior to any diagnostic team involvement.
8A.08	N/A	Yes	No	Pg. 685 of 781 Lines 42-44: The reference to a diagnostic team should be deleted from this paragraph. Recommend revising to, "Where adjacent grade crossings are located within 200 feet of each other along the highway, consideration should be given to the possibility that rail traffic might arrive at a grade crossing when rail traffic is already occupying the adjacent grade crossing." This guidance should apply even without diagnostic team involvement.
8A.09	N/A	Yes	No	Pg. 686 of 781, line 17: Recommend deleting the words, "the costs associated with".
8A.09	N/A	Yes	No	Pg. 686 of 781 Lines 20-21: The reference to diagnostic team should be deleted. Why does this require a diagnostic team to make a determination of the appropriate steps? If the engineering study itself does not require a diagnostic team, then why can't the study itself make that determination? The determination of the appropriate steps is usually more of a formality in the process.
8A.14	No	N/A	Yes	Pg. 688 of 781 Lines 40-45: We recommend this remain a standard as a "shall" condition. It is crucial that activities within a temporary traffic control zone not cause vehicle queuing on a grade crossing without the appropriate precautions. It is our understanding that the NCUTCD Subcommittee may be submitting a comment recommending that "flagger" should be a replaced with "railroad flagger" (an employee or contractor of the railroad). We do not believe that a railroad flagger is required in many cases. Construction activities could be such that queuing onto the tracks may occur rather infrequently, not warranting a dedicated person with the sole purpose, and no other duties, other than providing additional protection at the crossing. Furthermore, railroad flaggers are typically not trained, qualified, or authorized to direct vehicular traffic, rather, they dictate train movements. The type of flagger required is one that can direct vehicular traffic to prevent queuing onto the tracks.

				The proposed change is also not consistent with Section 6N.17.
8B.04	N/A	Yes	No	Pg. 692 of 781 Lines 23-28: This paragraph should be guidance, not a standard. If it is a standard, then what is the specifically meant by "a passive grade crossing located at a highway-highway intersection"? Does the crossing need to run through the middle of the intersection? If not, how far from the intersection can the crossing be located before this is no longer a requirement? The term "located at" is too vague and unless additional specific information is provided, then it needs to be guidance to allow some flexibility and engineering judgment.
8B.16	No	N/A	Yes	Pg. 698 of 781 Lines 18-22 and 34-36: The reference to section 2B.52 is in error and should be 2B.46. These new statements should be options, not guidance. The compliance date associated with section should be deleted. Not all low ground clearance vehicles, even within their same specific classification, are equally susceptible to hang up at a low ground clearance grade crossing. A categorical exclusion of a certain class of vehicles just because a very small portion of those vehicles are at risk, could be problematic. A feasible or suitable alternative to deter those vehicles may not be available. In many cases, improved warning signs with the use of word message signs, as opposed to both word message signs and exclusion regulatory signs, may be a preferred option. Low ground clearance crossings are not always clearly evident, and criteria used to define or determine a low ground clearance crossing are too generalized and vague.
8B.26	N/A	Yes	No	Pg. 701 of 781 Lines 27-32: We recommend a statement be added indicating that ENS signs should be mounted such that if automatic gates are present, the signs are not obstructed by the gate, or gate mechanism, when the gate is either in the vertical or horizontal position. We are aware of many existing installations where obstruction of this sign by automatic gates has occurred.
8C.03	N/A	Yes	No	We disagree with the proposed additional phrase, "whichever is further from the track(s)," and it should be deleted. If a separate gate assembly and cantilever is present, with the cantilever located in advance of the gate, placing the stop line 8 feet in advance of the cantilever and farther from the tracks may lead to reduced motorist compliance and reduced sight visibility along the tracks. The following is suggested language: "...should be placed approximately 8 feet in advance of the automatic gate, or flashing-light signals if no gate is present..."
8C.04	N/A	Yes	No	Pg. 704 of 781 Lines 1-3: Has there been any research that indicates lane-use turn arrow markings contribute to motorist turning onto the tracks, or is this a perceived concern? The proposed distance of 100 feet seems excessive. 50 feet may be more appropriate. Typical geometric conditions at a vast number of crossings are such that the 100 feet recommendation will not be achievable at a very high percentage of locations. Per part 3, lane-use arrows should be placed near the upstream end of the full width turn lane and one at an appropriate distance

				from the intersection stop line. Additional intermediate markings may also be used and are sometimes necessary when cross-streets, alleys or commercial driveways with considerable vehicular volumes are located within the area of the turn lane. The word "only" is generally used in addition and is placed in advance of the arrow, requiring a considerable amount of space to install both. Often the full width portion of the turn lane extends less than 100 feet in advance of the crossing. It is not advisable to preclude the installation of the upstream arrow as it could lead to motorist confusion and potential weaving operation within the crossing area. With respect to the 20 foot beyond far rail recommendation, it could preclude the installation of a turn arrow near the stop line if the crossing is located very close to the intersection. Elimination of that downstream arrow is not advisable. We recommend that the words "if the turn lane is sufficiently long enough to accommodate" be added after the words "upstream from the stop line for the grade crossing".
8C.05	N/A	Yes	No	Pg. 704 of 781 Lines 6-9: We concur and support that edge lines and lane lines installed thorough the crossing area may reduce the likelihood of motorists turning onto the tracks. Are centerlines considered edge lines? If not, shouldn't centerlines also be also included in this section? Some agencies may be opposed to this paragraph as guidance and may prefer that it be changed to option. There are usually increased difficulties with respect to maintenance of markings within the crossing area due to necessary safety requirements and crossing protection while working within the track area.
8C.05	N/A	Yes	No	Pg. 704 of 781 Lines 11-12: In addition to the surface possibly not being able to retain the markings, many railroads do not want markings applied to the crossing surface panels as they may be shifted during track resurfacing when they are removed and reinstalled. Although, this would not preclude application of markings to the paved areas between or directly adjacent to the panels.
8C.05	N/A	Yes	No	Pg. 704 of 781 Lines 13-16: The reference to a diagnostic team should be deleted from these statements. The use of minor items such as raised pavement markers or tubular markers shouldn't require assembling a diagnostic team. The use of these devices should not necessarily be precluded if a diagnostic team was not involved to make the recommendation. In Illinois we have found the use of tubular markers to be highly effective in deterring motorist from turning onto the tracks. We have had projects with various railroads for the installation of these devices on a corridor basis, without the involvement of a diagnostic team.
8C.05	No	N/A	Yes	Pg. 704 of 781 Lines 17-18: We are strongly opposed to this guidance statement. We have become strong advocates for the use of tubular markers to reduce the likelihood of motorists turning onto the tracks and have numerous installations. Reduced numbers of occurrences indicate they are highly effective and are such a simple and low-cost solution. At multiple track locations, the 6 feet requirement from any rail would preclude their use. The spacing

				between tracks at most multi-track crossings is not sufficiently wide enough to accommodate the 6 feet clearance distance. Furthermore, it is our understanding that the NCUTCD Subcommittee may support elimination of the 6 feet clearance distance and alternatively proposes language that indicates per the railroad's standards. We also disagree with a change that would indicate, per the railroad standards, as a railroad could arbitrarily decide to simply not allow the devices. Because these devices are optional and not required, we do not believe that language is necessary indicating a minimum clearance distance to a rail. Although, we would support guidance language that indicates that if the devices are installed in close proximity to the tracks, the devices should be no higher than 18 inches, should be flexible, and if placed between sets tracks at a multi-track crossing, they should be centered between the adjacent rails.
8C.06	N/A	Yes	No	Pg. 704 of 781 Lines 37-48: The preceding standard indicates a range of a 4-24 inch solid white line. The guidance and option paragraphs refer to only a 4 inch line. This may need further clarification.
8D.01	No	N/A	Yes	Pg. 706 of 781 Lines 34-36: We strongly disagree with this new standard statement and it should be deleted. A new standard indicating clearances shall conform to the railroad's standards is unacceptable. It conflicts with Illinois law, 625 ILCS 5/18c-7401 and Illinois Administrative Code, IAC, 92 Part 1535. What would prevent a railroad from establishing their own standard that could be unreasonable or inconsistent with common practice? This could also lead to lack of uniformity. The subsequent guidance statement is sufficient.
8D.01	N/A	Yes	No	Pg. 708 of 781 Lines 28-44: Diagnostic Team references should be deleted from all these statements. Minor items such as these should not warrant assembly of a diagnostic team. The recommendations in these statements are still appropriate, even without diagnostic team involvement.
8D.03	N/A	Yes	No	Pg. 710 of 781 Line 10: 25.4 inches is really splitting hairs. Is this based on a vendor's current product?
8D.10	No	N/A	Yes	While the current version of the MUTCD is somewhat lacking in information with respect to traffic signal preemption, we believe this is now too much detail for the MUTCD. The design of a railroad interconnected traffic signal preemption systems can be quite complex, and it is difficult to fully and adequately described within the confines of the MUTCD. Many of the guidelines and details provided are not adequately explained, descriptions are confusing, other pertinent information is missing and various other designs options are omitted. This can be misleading and leads to misinterpretation. We recommend that much of the proposed language be reconsidered, and left to other sources, such as a design handbook or recommended practice.
8D.10	N/A	Yes	No	Pg. 716 of 781 Lines 7-11: The regulatory agency should be deleted from this annual inspection guidance statement. The FHWA does not have the authority to compel a state regulatory agency to participate. Many states do not even have a regulatory

				agency. Inspections are the responsibility of the owners of the devices, the highway agency and the railroad. The ICC is a regulatory agency and does not have staffing levels sufficient to accommodate this task. The ICC does not maintain or operate the traffic signals, grade crossing devices or the interconnection between the devices. Other state regulatory agencies are likely in the same position. We do not disagree with the need for routine inspections, but is it even appropriate to include such language within the MUTCD? Does the MUTCD make similar recommendations for inspection of other traffic control devices?
8D.10	No	N/A	Yes	Pg. 716 of 781 Line 20: In Illinois, per 625 ILCS 5/18c-7401, the ICC has specific authority to determine the timing and railroad preemption sequence of operation. The diagnostic team does not have authority per Illinois State law. "A Diagnostic Team" should be replaced with "an engineering study."
8D.10	No	N/A	Yes	Pg. 716 of 781 Lines 25-29: This paragraph is confusing and not clearly written. If a signalized highway intersection is within 50 feet of the rail, it could be construed that the downstream traffic signal indications at the highway intersections control movements across the grade crossing. Assuming no pre-signals and a supplemental near right indication is present downstream of the tracks, but within 50 feet, it would require this supplemental signal to display a red indication during the track clearance interval. We suggest revising to state "...any indications located within 50 feet in advance of any rail or any pre-signal indications that may be installed on the far side of the tracks..." Furthermore, we recommend making this guidance as opposed to standard. There are so many unique scenarios that treating all locations with a one size fits all approach will lead to issues. One example is locations where the traffic signals go to a red flash condition. Flashing red is not the same as displaying red indications.
8D.10	N/A	Yes	No	Pg. 716 of 781 Line 38: The IEEE standard refers to an alternative data communications interface, not a supervisory interconnect.
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 8-9: It appears that the standard in the current MUTCD of allowing an electrical circuit of the closed-circuit principle, which could be a normally closed "single-break", is being eliminated. It could be argued that a double-break circuit without supervision, does not provide any enhanced safety over a single-break circuit, and could be less safe. The railroad industry uses double-break circuits within their circuit designs, to provide enhanced safety to reduce the likelihood of electrical short conditions resulting in activation failures. But crossings are designed to fail in an activated state with flashers on and gates down, known as a false activation. A false activation of the traffic signal interconnection (when the crossing devices are not active, but the traffic signal preemption is activated) is usually not a safe condition. A double-break interconnect circuit, without supervision, may slightly reduce the likelihood of an electrical short condition that could disable preemption (although, an electrical short in the interconnect cable is still a possibility with a double-break), it

				increases the potential likelihood of an electrical open circuit condition resulting in a false activation of preemption. A false preemption could hold the traffic signals in a parallel street green, without providing another track clearance indication for when the crossing finally activates due to arrival of a train. Illinois typically uses supervision circuits, but we suspect that many other states still rely on a basic normally closed single break circuit.
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 13-14: In Illinois, per 625 ILCS 5/18c-7401, the ICC has specific authority to determine the timing and railroad preemption sequence of operation. The diagnostic team does not have authority per Illinois State law. "A Diagnostic Team" should be replaced with "an engineering study."
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 19-25: This paragraph is confusing; the message is unclear and could lead to misinterpretation. This is an attempt to explain a rather complex topic. The level of detail necessary to properly explain is better left to a design guideline or handbook, not the MUTCD. References to simultaneous or advance preemption only further create confusion. We recommend the following alternative language to the entire paragraph. "The decision to implement preemption should include consideration of the right-of-way transfer time, the queue clearance time and the separation time in order to determine the maximum preemption time. These times are based of traffic signal minimum timing, vehicle acceleration characteristics and physical distances along the roadway."
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 27-29: For clarity, the following should be added to the end of the sentience, "resulting in a variable amount of advance preemption time." Otherwise, it is not clear what the varying train speed does. Consider greatly simplifying this and subsequent paragraphs. All that really needs to be stated, is that the preemption system should be designed to prevent a condition in which the track clearance interval completes before the gates are lowered, a condition that is more prevalent with the use of advance preemption.
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 30-31: The following should be added to the end of the sentence, "or increase in situations when rail traffic is decelerating." This scenario is more critical when analyzing preemption time variability. When advance preemption time increases, it increases the possibility for the track clearance interval to complete before the gate is fully lowered.
8D.10	No	N/A	Yes	Pg. 717 of 781 Lines 33-34: This guidance statement should be deleted. What purpose does an analysis provide when there typically is no practical solution? There may be a perception that the use of advance preemption eliminates or greatly reduces the likelihood of a gate descending onto a vehicle. But, for that to be true, sufficient advance preemption time would need to be provided to accommodate for right of way transfer time, queue start up time and then enough time for that vehicle to precede past the gate, all before the crossing activates. This would require excessively long total preemption times, likely exceeding AREMA guidelines.

				Furthermore, is it really better to allow additional vehicles to enter the Minimum Track Clearance Distance? Tendency for motorists in a moving queue is for those motorists to focus on the vehicle in front of them with reduced focus on the warning devices. Is it better to have a gate descend on a stopped vehicle, or a gate that gets broken by a moving vehicle?
8D.10	No	N/A	Yes	Pg. 717 of 781 Lines 35-36: This is a misleading statement with the intention of promoting advance preemption over simultaneous. The MUTCD should not have language that promotes one over the other. Even with the use of advance preemption, crossing waring times are typically extended. Does this really mean that with use of advance preemption, an analysis is not necessary? Recommend the entire statement be deleted, or at least simultaneous preemption be removed from the statement.
8D.10	N/A	Yes	No	Pg. 717 of 781 Lines 37-40: This statement is unclear and confusing as currently written. All that really needs to be stated, is that the preemption system should be designed to prevent a condition in which the track clearance interval completes before the gates are lowered, a condition that is more prevalent with the use of advance preemption.
8D.10	No	N/A	Yes	Pg. 717 of 781 Lines 44-50 and Pg. 718 of 781 Lines 1-6: The standard requiring the gate(s) to be lowered before termination of the track clearance interval applies if simultaneous or advance preemption is used but becomes more of a concern when advance preemption is used. The support statements provide options that are typically only used with advance preemption. Support statement "A" (gate down circuitry) could be used with simultaneous preemption, but predominantly would be used with advance preemption. Statement "B" is only used with advance preemption. When simultaneous preemption is used, the simplest and most common method is to simply make the track clearance interval long enough to allow time for the gate(s) to descend. Even with simultaneous preemption, an aspect of preemption time variability still exists. The traffic control signals could be in the track clearance movement when preemption is initiated, resulting in completion of the track clearance interval in the shortest time possible. Because preemption time variability still exists with simultaneous preemption, it could be misconstrued that either method A or B should be used, even with the use of simultaneous preemption. This is a complex topic and without adequate additional information, it will cause confusion and can be misleading. We recommend that much of this information be removed from the MUTCD. Other external sources of information are available on this subject.
8D.10	No	N/A	Yes	Pg. 718 of 781 Lines 7-13: This should not be a standard, but rather guidance. To many variables exist from one location to another and a one size fits all approach is not appropriate. Each location should be treated on a case by case basis.
8D.10	No	N/A	Yes	Pg. 718 of 781 Lines 15-17: This guidance statement should be deleted.

				If the dynamic exit gate operating mode is used, where vehicle detection controls the exit gates, it is not necessary to use advance preemption. In fact, with consideration of AREMA's guidelines limiting the amount of preemption time, it is more prudent to lower the entrance gate sooner with the use of simultaneous preemption to prevent additional vehicles from entering the Minimum Track Clearance Distance. If timed exit gate mode were to be used, then advance preemption would be prudent. But timed exit gate mode would not be recommended at locations with queuing concerns in the first place.
8D.10	No	N/A	Yes	Pg. 718 of 781 Lines 27-31: This statement should absolutely be changed to guidance. We have several industry track locations where the tracks diagonally cross two legs of the highway intersection (triangle). The crossings are not equipped with gates, and do not warrant gates based on train operations. At those locations, the traffic signal preemption design is such that the traffic signals enter an all-way red flash dwell immediately to allow the traffic signal to operate in a 4-way stop control to effectively clear both crossings of vehicular queues (no track clear green indications are provided). Otherwise, gates would need to be added, warning times considerably extended, and the preemption design would need to provide two separate track clearance intervals. This would greatly increase the complexity of these crossings, when it simply is not warranted based on the low train speeds, volumes, and type of train operations.
8D.10	N/A	Yes	No	Pg. 718 of 781 Lines 32-37: "The Diagnostic Team" should be replaced with "an engineering study." In Illinois, per 625 ILCS 5/18c-7401, the ICC has specific authority to determine the timing and railroad preemption sequence of operation. The diagnostic team does not have authority per Illinois State law.
8D.11 and Fig. 8B-1	No	N/A	Yes	Pg. 719 of 781 Lines 7-11 and Lines 43-46; and Fig. 8B-1: Figure 8B-1 does not provide for the use of a blank-out sign without the word "Train". The use of the word "train" should not be a requirement, but rather an option. The standard sign should include only the international symbol for No Right Turn or No Left Turn. There are locations where these signs are used at the same intersection for multiple purposes, such as train preemption, bridge preemption, special pedestrian phases, etc. It is not feasible to install multiple signs for separate purposes. The use of the word train may provide some additional information to motorists and may be useful in some instances, such as locations where the crossing isn't directly visible to motorists. But we do not believe that adding the word train will necessarily improve compliance at locations where it is quite obvious that the crossing is activated, and a train is approaching. These signs are mainly used at locations where the tracks are in close proximity. Requiring the word train will requiring a larger sign. These signs are already quite large and heavy. Many of these signs are installed on mast-arms, where weight and wind loading can be of concern; it could require

				additional structural analyses to be performed on a case by case basis. The proposed change to the standard indicating that the sign shall only be visible while the railroad preemption signal is being received should be changed to guidance. As previously indicated, there are locations in which the signs are used for multiple purposes, not just railroad preemption. Furthermore, in some cases where the tracks are located in very close proximity to a highway intersection, it may be prudent to keep the blank-out signs active for a short period of time after the railroad preemption signal terminates. The preemption signal terminates when the gates begin to rise. It may not be desirable to allow motorists to make turns towards the crossing until the gates have had sufficient time to reach the ventricle position. We suspect the proposed revision to this standard, to terminate the signs just as the gates begin to rise, is because if the word train is used, it could send mixed messages to motorists. That alone, is another reason why the word train should not be a requirement.
8D.12	No	N/A	Yes	Pg. 720 of 781 Lines 8-9: This guidance statement should be deleted. The recommendation should be to install gates, but that is already included earlier in the preemption section. Aren't motorists supposed to stop for flashing light signals when a train is approaching? If motorists do not comply with flashing light signals, it is unlikely they will comply with pre-signals.
8D.12	No	N/A	Yes	Pg. 720 of 781 Lines 20-24: This guidance statement is not necessary in the MUTCD, is poorly written, not all inclusive and, therefore, should be deleted. Why does it only focus on left turning vehicles? Isn't it important to clear through and right turning vehicles also? There are other options, such as use of protected only left turn phasing, restricting left turns, etc. The MUTCD is not a design manual.
8D.12	No	N/A	Yes	Pg. 720 of 781 Lines 34-38: This standard should be deleted. What is the difference if pre-signals are use of not? This applies to preemption in general, not only when pre-signals are used. Also, it is not required to clear the vehicle through the intersection during the queue clearance time, even if there is insufficient clear storage. That is what yellow clearance time is used for. It should not be a standard.
8D.12 and 4F.01	No	N/A	Yes	Pg. 721 of 781 Lines 4-18: These comments apply to sections 4F.01 and 8D.12, the use of straight through green arrows, no turn arrows, on pre-signals. We strongly disagree with this new standard, as this could potentially create a greater hazard to motorists than the crossing itself. We understand why this is being proposed, but this is not the solution, especially without any research to determine how motorists react. We are unaware of locations where only straight through arrows are used. This new standard could have detrimental consequences. Numerous locations with pre-signals have unique geometry, many with little to no clear storage. There will be locations where this new standard is not possible. This proposed standard could result in many instances where the only feasible solution is removal of the pre-signals altogether.

				Illinois has more than 145 pre-signals that have been installed to direct motorists to stop in advance of the tracks. These are all locations where the clear storage distance is short, and in many cases insufficient to safely store a single vehicle between the tracks and highway intersection. Most of the installations have exclusive left turn lanes that extend beyond the crossing, with left turn indications installed as part of the pre-signal. Very few have exclusive right turn lanes beyond the tracks. We do not believe that left turn indications on the pre-signals contribute to motorists turning left onto the tracks. In our experience, most incidents of motorists turning onto the tracks at grade crossings are right turning rather than left. Regardless, there are other ways to deal with issues of motorists turning onto the tracks, such as geometric improvements including channelization, roadway lighting, delineators in the crossing area (has been very effective in Illinois), pavement markings and signage. Straight through arrows for a left turn movement will contribute to motorist confusion potentially leading to an increase in vehicle-vehicle accidents in close proximity to the grade crossing. Vehicular accidents near a grade crossing have direct implications to safety at the crossing. Motorists proceeding straight through the intersection during other conflicting movements, from inappropriate lanes or motorists making risky weaving maneuvers either mistakenly or intentionally (to bypass queued vehicles) are just a few concerns. The closer the tracks are to the intersection, the more likely would be motorist confusion and risky behavior. A design with only straight through arrows, could be quite difficult to implement. Left lane signal displays will need to be appropriately situated near only the corresponding lanes. It will require separate 3-section indications for left turns, as opposed to some designs that use more typical 5-section displays with protected/permissive lefts. At some locations it will not be possible to install the separate indications and provide adequate visibility, due to geometric constraints. If a railroad cantilever is present, overhead traffic signal indications are combined onto the railroad cantilever to minimize obstructions and provide improved visibility. Most existing railroad cantilevers would be insufficient in length to accommodate separate left turn displays. Left Turn Lane Signals signs may reduce some motorist confusion, but likely not eliminate it. A large number of signs already exist with pre-signals and additional signs will likely increase obstruction of other warning devices, especially at locations with center median devices. Programmable visibility limiting displays are not ideal at locations where the stop line is in in close proximity, as the intensity of these indications greatly diminishes at close distances. Locations that use protected/permissive left turn phasing will have a situation where a protected indication is provided to left turning motorists at the pre-signal, but a permissive (circular green) is provided at the intersection. This could lead to a high probability of left turning accidents. If this is made into a new standard, to address what we believe is a perceived notion that turn indications on the pre-signals contribute to vehicles turning onto the tracks (has not been our experience), it will result in the removal of numerous pre-signal installations. That

				would not be advisable, as the pre-signals are quite effective in deterring motorists from stopping on the tracks.
8D.12	No	N/A	Yes	Pg. 721 of 781 Lines 19-27: We strongly disagree with this interpretation that pre-signals are considered to be a separate approach from the downstream signals, essentially to be treated as primary signal faces. In 2014, the FHWA issued an interpretation of the current MUTCD in relation to this issue. Subsequently, the ICC and IDOT provided responses to the FHWA, in which we have never received an official response. Copies of the letters are attached at the end of this document, as the concerns outlined in our response letter are still valid. IDOT's letter makes the argument that pre-signals are neither primary nor supplementary signal faces, but rather should be considered their own unique category. Illinois currently has more than 145 pre-signal installations. If this language remains as written, it will have severe implications to the use of pre-signals in the State of Illinois. We believe that many other states have adopted similar pre-signal designs as used in IL and will have same impacts.
8D.12	No	N/A	Yes	Pg. 721 of 781 Lines 35-36: The No Turn On Red signs should be installed at the pre-signal, not the downstream intersection. The design is to not allow motorists to move forward onto the tracks to make a right on red. If the motorist is within the track area, it is preferred that the motorist exit the area.
8D.12	N/A	Yes	No	Pg. 721 of 781 Lines 43-44: If pre-signal faces are located downstream from the grade crossing, it should be evaluated, especially at locations with a long Minimum Track Clearance Distance, to insure a condition is not created where it contributes to confused motorists stopping on the tracks for a red pre-signal indication. This is especially important because pre-signals are designed to display red indications when the warning devices are active. We recommend a support statement be added.
8D.13	No	N/A	Yes	Like the preemption section, this this new section pertaining to queue cutter signals has too much information for the MUTCD. The MUTCD should not be used as a design manual and information should be limited to standards, necessary guidance, and options.
8D.13	N/A	Yes	No	Pg. 722 of 781 Line 2: The words “is operated independently” conflict with a later statement indicating that the queue cutter should be considered for coordination with adjacent signals (could be downstream).
8D.13	N/A	Yes	No	Pg. 722 of 781 Lines 8-19: Much of this information is not necessary to be included in the MUTCD. Are the distances provided under the support statement based on research? There could be a considerable amount of variability based on specific site conditions and the distances provided are somewhat arbitrary.
8D.13	N/A	Yes	No	Pg. 722 of 781 Lines 26-27: If queue cutter faces are located downstream from the grade crossing, it should be evaluated, especially at locations with a long Minimum Track Clearance Distance, to insure a condition is not created where it contributes to confused motorists stopping on the tracks for a red queue cutter indication. This is especially important because queue cutter indications are designed to display red when the warning devices are active. We recommend a support statement be added.
8D.13	No	N/A	Yes	Pg. 722 of 781 Lines 30-35: It is not feasible design a vehicle detection system located downstream of a queue cutter signal to guarantee that in all cases that queues will be adequately detected with sufficient time to terminate a green at the queue cutter. Traffic progression and vehicle headways cannot always be controlled. Therefore, considering that there are inherent flaws with any design

				of a vehicle detection system for a queue cutter, the vehicle detection system should not require self-check capabilities. This should not be a standard. One of the preceding guidance statements even indicates that intermediate driveways could cause queuing issues. Depending on location, additional detection may not be feasible. A queue cutter may reduce queuing onto the tracks, but there is no design that will always prevent it.
8D.14	N/A	Yes	No	Pg. 724 of 781 Lines 47-48: Traffic signal preemption allows for other alternatives, why is a supervised circuit the only option allowed for warning beacons and LED-enhanced warning signs?
8D.14	No	N/A	Yes	Pg. 725 of 781 Lines 13-16: We disagree with this Guidance statement indicating that back-up power should provide for a minimum operating period to allow for alternate traffic control measures and it should be deleted. It is unclear what alternative traffic control measures mean and it can create liability concerns. This is inconsistent with language in Section 8D.02 with respect to battery/stand-by power for railroad flashing signals. In that section, there is no provision or requirement for batteries to operate for a certain time period to allow for alternate traffic control measures. It could be argued, in the case of railroad flashers, that it is much more safety critical to have such a requirement. At locations with railroad flashers, especially at locations without gates, if power fails and the batteries are depleted, there will be no indication to motorists that a train approaches (activation failure). If this is added for warning beacon or LED enhanced signs, then it should be added for railroad active devices as well.
8E.02	N/A	Yes	No	Pg. 729 of 781 Lines 42-45: At many skewed grade crossings, it is not feasible to provide a right-angle pedestrian crossing due to geometric and right-of-way constraints. The guidance should be changed to discourage narrow approach angles, as opposed to focusing on a right angle. It requires a balance between providing an improved angle, while maintaining a relatively tangent path that does not introduce other hazards, such as other sharp angles and drop-offs, and a path in which pedestrians will stay on, without trying to shortcut. Recent studies show that a 60-degree angle mitigates hazards associated with cyclists, and at least 45 degrees provides considerable improvement. Casters of wheelchairs are of concern even at 90 degree crossings. Is this Support statement even appropriate for the MUTCD, as it does not directly pertain to a traffic control device? The MUTCD is not a roadway design guideline. It would be more appropriate in the AASHTO Policy on Geometric Design of Highways and Streets.
8E.03	N/A	Yes	No	Pg. 731 of 781 Lines 1-2: The minimum 2 feet lateral offset for a device mounted less than 7 feet in height is not consistent with Sections 2A.14 and 2A.15, with respect to the installation of signs near sidewalks.
8E.06	N/A	Yes	No	Pg. 734 of 781 Lines 4-7: When fencing is installed in close proximity to automatic gates, care should be taken to prevent possible pinch points between the fence and any movable counterweights or extensions that may be part of the automatic gate. We recommend an additional support statement.

TABLE 2. AGREE WITH ANOTHER COMMENTER. If you agree with another commenter, please indicate the commenter with whom you agree with and note any additional information FHWA may find helpful or any exceptions.

Docket Comment Number and/or Commenter Name	Agree with commenter's comments as written	Agree with commenter; with exception(s)	Additional information helpful to FHWA, or exceptions to commenter's comments

October 10, 2014

Mr. Chung Eng
MUTCD Team Leader
Federal Highway Administration
Office of Transportation Operations, HOTO-1
1200 New Jersey Avenue, SE
Washington, DC 20590

RE: MUTCD Request for Interpretation

Dear Mr. Eng:

I am writing to you seeking a request for an interpretation regarding the 2009 MUTCD Section 4D.13 entitled Lateral Positioning of Signal Faces. The request involves the definition and application of a Primary Signal Face as it applies to a Pre-Signal at a grade crossing.

DEFINITIONS

2009 MUTCD Section 1A.13 defines a Primary Signal Face as follows:
One of the required or recommended minimum number of signal faces for a given approach or separate turning movement, but not including near-side signal faces required as a result of the far-side signal faces exceeding the maximum distance from the stop line.

2009 MUTCD Section 1A.13 defines a Pre-Signal as follows:
Traffic control signal faces that control traffic approaching a grade crossing in conjunction with the traffic control signal faces that control traffic approaching a highway-highway intersection beyond the tracks. Supplemental near-side traffic control signal faces for the highway-highway intersection are not considered pre-signals. Pre-signals are typically used where the clear storage distance is insufficient to store one or more design vehicles.

BACKGROUND

The use of pre-signals at a grade crossing is addressed in 2009 MUTCD Paragraphs 11-16.
Paragraph 12 states:

Standard:

[12] **If used, the pre-signals shall display a steady red signal indication during the track clearance portion of a signal preemption sequence to prohibit additional highway vehicles from crossing the railroad track.**

Where pre-signals are used at a grade crossing, the pre-signals are required to display a steady red signal indication during the track clearance portion of the preemption sequence. This would generally indicate that the signal faces at the intersection beyond the grade crossing are displaying green indications in order to permit vehicles to clear the minimum track clearance distance prior to the arrival of an approaching train. This also seems to indicate that pre-signal faces are not near-side signal faces for the intersection due to the fact that they may display different signal indications from the signal faces located at the intersection. This also means that during the time that the pre-signal faces are displaying red signal indications and the intersection signal faces are displaying green signal indications, road users are required to stop before entering the grade crossing and certainly before entering the downstream intersection. 2009 MUTCD Section 4D.13 addresses the distances signal faces shall be located from the stop line which denotes the point where a stop is intended or required to be made as a Standard.

REQUEST FOR INTERPRETATION

Based on the above information, the request for interpretation is:

- Are pre-signal faces considered Primary Signal Faces as defined in 2009 MUTCD Section 1A.13 and specified in 2009 MUTCD Section 4D.13?

- Is the forty foot minimum distance from the stop line to the primary signal faces as depicted in Figure 4D-4 applicable at a pre-signal?

A photograph of a location generating this request is included below for your reference.

It is my belief that the answer to both questions is yes; However, I await your formal interpretation.

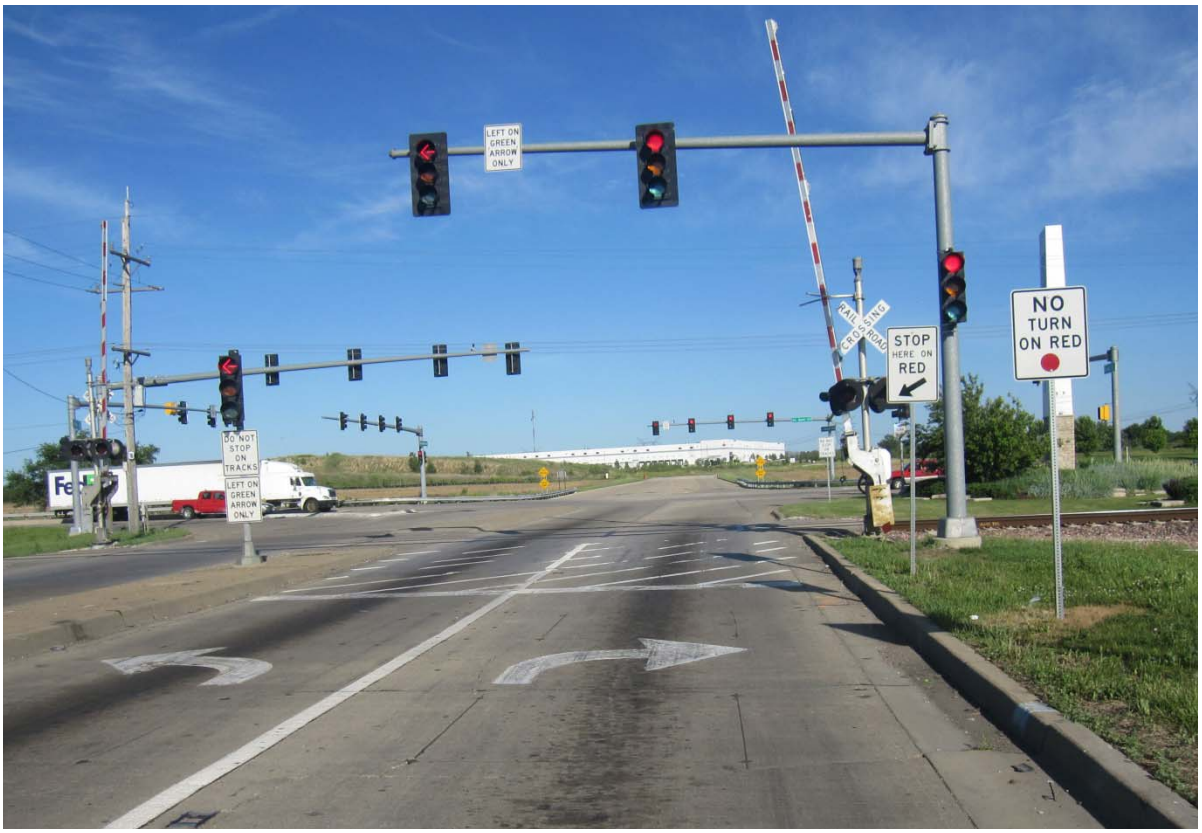
Thank you for your attention to this matter.

Sincerely,

CTC, Incorporated

Richard M. Campbell
President

cc: Mr. Bruce Friedman, FHWA MUTCD Team


LEFT ON GREEN ARROW ONLY
DO NOT STOP ON TRACKS
LEFT ON GREEN ARROW ONLY
RAIL ROAD CROSSING
STOP HERE ON RED
NO TURN ON RED

U.S. Department
of Transportation
**Federal Highway
Administration**

1200 New Jersey Ave., SE
Washington, D.C. 20590

NOV - 5 2014

In Reply Refer To:
HOTO-1

Mr. Richard M. Campbell
President
CTC Incorporated
6100 Southwest Boulevard, Suite 500
Fort Worth, TX 76109-3985

Dear Mr. Campbell:

Thank you for your letter of October 10 requesting an official interpretation regarding the required positioning of signal faces at pre-signals.

The two questions that you specifically asked in your letter are: 1) whether the signal faces for a pre-signal are considered to be primary signal faces as specified in Item A of Paragraph 1 in Section 4D.11, and 2) is the 40-foot minimum distance specified in Item A1 of Paragraph 1 in Section 4D.14 applicable to signal faces for a pre-signal.

The basic question being asked in your letter is whether the approach to a pre-signal is considered to be a part of the approach to the downstream signal or is it an independent approach from the approach to the downstream signal. Because the signal indications being displayed at the pre-signal are not always the same as the signal indications being displayed at the downstream signal, the approach to the pre-signal is an independent approach and the signal faces for the pre-signal would be considered to be primary signal faces as specified in Item A of Paragraph 1 in Section 4D.11. In contrast to this, near-side signal faces associated with the downstream signal that always simultaneously display the same signal indications as the downstream signal would be considered to be a part of the approach to the downstream signal and would be considered to be supplemental signal faces rather than primary signal faces.

When road users are stopped by the display of red signal indications at the pre-signals, they need to be able to see at least one signal face from the stop line so that they know when it is appropriate to proceed again on a green signal indication. Because the signal faces at the downstream signal display different signal indications than the pre-signal signal faces, road users who are waiting at the stop line cannot use the signal faces at the downstream signal to determine when it is appropriate to proceed again.

It is the FHWA's official interpretation that the requirements for signal face positioning at a pre-signal are governed by the same provisions as any other independent approach to a signal. This means that the provisions in Sections 4D.11 through 4D.14 regarding the number of signal faces, the visibility and aiming of the signal faces, and the lateral and longitudinal positioning of the signal faces apply separately to the approach to the pre-signal.

If the requirement to locate at least one of the signal faces for the pre-signal at least 40 feet from the stop line results in the signal face being located on the far side of the track(s), that is acceptable. If this signal face is not visible when a train is occupying the crossing, the presence of the train and the active devices (flashing-light signals and/or gates) at the crossing will keep the road users stopped at the stop line until the train has cleared the crossing, at which point the signal face for pre-signal will be visible again.

For recordkeeping purposes, we have assigned the following official ruling number and title: "8(09)-19 (I) – Positioning of Signal Faces at Pre-Signals." Please refer to this number and title in any future correspondence regarding this topic.

Thank you for your interest in improving the clarity of the provisions contained in the MUTCD.

Sincerely yours,

Mark R. Kehrli
Director, Office of Transportation
Operations

STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION
TRANSPORTATION BUREAU / RAIL SAFETY SECTION

Michael E. Stead *Rail Safety Program*
Administrator

December 19, 2014

Mr. Mark R. Kehrli, P.E.
Director
Office of Transportation Operations
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

RE: **"Official Ruling No. 8 (09)-19(I) – Positioning of Signal Faces at Pre-Signals" November 5, 2014 Letter to Mr. Richard M. Campbell (NCUTCD Chair, Part 8)**

Dear Mr. Kehrli:

This is in response to your letter dated November 5, 2014, with which you provided the Federal Highway Administration's (FHWA) official interpretation relative to the requirements for signal face positioning at traffic highway intersections that include pre-signals. The interpretation was requested by Richard M. Campbell of CTC, Inc.

Following a review of your letter, this office believes that the official ruling is in contradiction with the MUTCD and past guidance and positions provided by the FHWA, all of which were utilized by the State of Illinois since the issue came to prominence in 1995. Over the past 20 years, Illinois has invested over $300 million at approximately 330 highway-railroad grade crossings where railroad warning devices are interconnected to adjacent highway traffic signals. This investment has resulted in a significant decline in train-vehicle collisions at these locations. Of these interconnected crossings, 90 locations include pre-signals as part of the design. At one traffic signal location equipped with pre-signals, train-vehicle collisions dropped from 29 to 0, when comparing a 14-year time period before safety enhancements for the whole interconnected system were implemented (1987-2000) versus a 14-year time period after safety enhancements were implemented (2001-2014). Given the number of interconnected locations, pre-signals, and the reduction in collisions, I believe this office has significant field experience and awareness of the challenges to improving each unique interconnected crossing.

With this history in mind, and the fact that a location with pre-signals is currently the subject of Commission proceedings, it was disappointing to see your letter concerning the subject matter. Separate from the timing and circumstances associated with the interpretation request, it was also disappointing that the conclusions reached in the letter do not appear to be based in engineering rigor, but rather opinion, and include the opinions from the party to whom you were responding. The requesting party is currently an expert witness in the aforementioned Commission proceeding, and both the

requesting letter and apparent expedited response from the FHWA were utilized as exhibits in an attempt to justify testimony provided during the proceedings.

This Office believes the determination that pre-signals are considered primary signal faces and corresponding requirements for positioning of these signals will introduce hazards that are not currently present at the pre-signal locations in Illinois as well as introduce significant operational issues at these locations. Additionally, the FHWA's conclusion appears to conflict with certain sections in the 2009 edition of the MUTCD, as well as past practices, established criteria, and the official position taken by the FHWA in the National Register. Finally, this Office doesn't believe this type of ruling, which could affect language and associated requirements in future MUTCD editions, should be made unilaterally, without research into operational and safety impacts, investigation into existing practices and consensus among interested parties. This Office strongly disagrees with and opposes the FHWA's official interpretation concerning this matter.

The vast majority of pre-signal locations in Illinois have been designed and implemented based on recommendations from the **FHWA-SA-97-085 report** "Implementation Report of the U.S. DOT Grade Crossing Safety Task Force, Report to Secretary Rodney E Slater", published in June, 1997. In this publication, pre-signals were defined as "supplemental highway traffic signals operated as part of the highway intersection traffic signals located in a position that controls highway traffic approaching the railroad crossing and intersection". The implemented designs include stop line placement at or near the pre-signal location in advance of the tracks, which help certain vehicles obey Illinois state law[1] and position them for the greatest sightlines along the tracks. In addition, since stop lines are not always durable or may be covered during snow events, this design also defines a stopping point for vehicles and has proven to have a good record of obedience in Illinois (Note: several video clips on a USB flash drive are enclosed for your use; flash drive password: 1793179).

It is noted that the first paragraph on the second page of your letter references pre-signal designs located on the exiting (or "far side") of the crossing. This type of design is not utilized in Illinois for numerous reasons. First and foremost driver confusion – causing vehicles to stop on the tracks facing a red indication during a preemption event. It was noted that this paragraph states "and the active devices (flashing-light signals and/or gates) at the crossing will keep the road users stopped at the stop line...". Figure 8B-6 in the 2009 edition of the MUTCD notes "*Stop line approximately 8 ft. upstream from gate (if present)*". This seems to indicate that the FHWA acknowledges that a stop line located 8 feet upstream for one form of traffic control device is sufficient for road user visibility.

Note: [1] Illinois state law (625 ILCS 5/11-1202) requires certain vehicles (school buses, hazardous material haulers as examples) to stop within 50 (but not less than 15 feet) of the nearest rail at a railroad grade crossing. Additionally, 92 Illinois Administrative Code (92 IAC), Part 1535.205 requires the railroad right of way to be kept reasonably clear of brush, shrubbery, trees, weeds and crops for a distance of 500 feet each way from the crossing.

If the FHWA's official interpretation concerning this matter (including a 40-foot minimum distance requirement to stop line) is adopted, and with the required physical offsets for placement of railroad warning devices and traffic signals from the tracks, then certain noted vehicles will be required to stop twice (since they will be located beyond 50 feet of the nearest rail at a crossing). This will introduce increased potential for rear-end accidents while diminishing, or in most cases eliminating, sightlines along the tracks. Also, the interpretation does not account for the unique aspects inherent at all crossings, where a single design cannot account for all challenges such as multi-track locations, crossing skew, and the proximity of driveways or other intersections. As important, many of our pre-signal locations exist in over-capacity urban intersections located adjacent to each other along commuter rail territory. Traffic signal timing increases, due to increased distances required to traverse a crossing, involved in both the normal operation and preemption routines (offset time between the supplemental pre-signal terminating before the downstream primary traffic signal on a cycle-by-cycle basis along with greater track clear green requirements in preemption routines) will be required if this FHWA position is adopted. We believe that will lead to a worsening of congestion, and increase the likelihood that a track clear green indication will be rendered useless if traffic is backed up on a highway parallel to a crossing due to the increased congestion. We believe that a vehicle will not be able to exit a crossing both during a preemption event and normal operation because of newly introduced traffic congestion caused by this FHWA official interpretation. Other detrimental effects of this decision, if implemented, include: driveway/side street conflicts; reduced or eliminated turn lane storage; vehicle detection coverage and maintenance; and, newly introduced driver "dilemma zones".

The current MUTCD does not require the use of pre-signals, and this office concurs. This fact alone should be a major consideration in the determination that pre-signals are a "supplemental highway traffic signal". In addition, I note the following sections of the MUTCD:

- Section 8C.09, paragraph 11 states, in part, "… the use of pre-signals to control traffic approaching the grade crossing *should* be considered". Paragraph 15 states, in part, "…a STOP HERE ON RED (R10-6) sign shall be installed *near* the pre-signal…".
- Paragraph 16 states, in part, "…a pre-signal *may* be used if an engineering study determines a need."
- Section 4D.13, paragraph 2 states "If both of the minimum of two primary signal faces required for the through movement (or the major turning movement if there is no through movement) on the approach are post-mounted, *they shall both be on the far side of the intersection*, one on the right and one on the left of the approach lane(s).
- Section 1A.13 defines a pre-signal as "Traffic control signal faces that control traffic approaching a grade crossing *in conjunction with the traffic control signal faces that control traffic approaching a highway-highway intersection beyond the tracks*. Supplemental near-side traffic control signal faces for the

> highway-highway intersection are not considered pre-signals. Pre-signals are typically used where the clear storage distance is insufficient to store one or more design vehicles".

The fact that pre-signals are not required in combination with the above noted MUTCD statements and definitions highlight the conflicts of the FHWA's official interpretation and current MUTCD. Also, it should be noted that previous versions of the MUTCD specifically defined a pre-signal as "*supplemental highway traffic signal faces* operated as part of the highway intersection traffic signals, located in a position that controls traffic approaching the highway-rail grade crossing in advance of the intersection". Further, in the Federal Register (Volume 74, No. 240; page 66847), it notes the "pre-signal" definition was changed for the 2009 MUTCD not because of a concern that a pre-signal is supplemental, but because:

"An NCUTCD member suggested revising the existing ''pre-signal'' definition to clarify that supplemental near-side traffic control signal faces for the highway-highway intersection are not considered pre-signals and that pre-signals are typically used where the clear storage distance is insufficient to store one or more design vehicles. The FHWA agrees and adopts the definition as suggested by the commenter with editorial revisions in this final rule."

Further, confirming past FHWA rulings on the location of a stop line for a highway-rail grade crossing near an intersection, page 66853 in the Register in reference to Part 8 identifies:

"A State railroad operator suggested providing GUIDANCE regarding the appropriate placement of the stop line where tracks are within or adjacent to an intersection. The FHWA declines to add the suggested statement because engineering judgment should dictate stop line placement in those situations due to the wide variety of situations where tracks are within or immediately adjacent to the intersection."

It is noted in the third paragraph on the first page of your letter the following statement: "*Because the signal indications being displayed at the pre-signal are not always the same as the signal indications being displayed at the downstream signal, the approach to the pre-signal is an independent approach and the signal faces for the pre-signal would be considered to be primary signal faces as specified in Item A of Paragraph 1 in Section 4D.11*". What research or data was provided to make this determination? In addition, Section 1A.13 of the MUTCD defines an approach as: "Approach - all lanes of traffic moving toward an intersection or a midblock location from one direction, including any adjacent parking lane(s)." It is noted that the definition of an intersection in section 1A.13 does not include grade crossings and midblock location is not defined. Will the FHWA's official interpretation re-define the meaning of "approach"?

With the previous paragraph's context in mind, it should be noted the FHWA's official interpretation only pertains to one particular situation, and if this interpretation stands, has unintended negative impacts as described above. During normal operation, the

traffic signals controlling an approach to a highway intersection that includes supplemental pre-signals in advance (or upstream) of a grade crossing operate the same regardless of the stop line location. In Illinois, the start of the approach's green phase, road users utilize *the primary signal faces on the far side of the intersection*. The one particular situation noted above is described in the fourth paragraph on the first page of your letter. This is a railroad preemption event that occurs when the approach to a highway intersection that includes supplemental pre-signals in advance (or upstream) of a grade crossing is in its' red phase. Illinois utilizes simultaneous preemption at all of its traffic signals interconnected to railroad warning devices. As a result of this, the railroad warning devices (flashing-light signals and/or gates) will have been activated for a minimum of 5-7 seconds for the parallel street's clearance phases. As noted previously, the current MUTCD and your letter indicate that a stop line located 8 feet upstream of this traffic control device is sufficient for road user visibility and we concur.

The 2009 MUTCD Section 1A.10 "Interpretations, Experimentations, Changes, and Interim Approvals" under paragraph 7 "Requests for an interpretation of this Manual should contain the following information:" section D: "Any supporting research data that is pertinent to the item to be interpreted". Neither the request for interpretation in this matter, nor the FHWA's official interpretation response letter contained any supporting research data that would support this type of decision. In contrary, it excluded the substantial research data and previous studies that identified the discrepancies between Chapter 4 and Chapter 8 of the MUTCD in relation to stop bar location. This research also highlighted the options and benefits with multiple design types.

It is this Office's understanding that when a recommendation to modify designs for traffic control devices are proposed, they are made to correct deficiencies that will help improve the safety of road users. These recommendations are usually backed up with supporting research data for justification. We see neither a deficiency nor supporting research data to justify this proposal. In fact, this Office has hard data that would suggest the opposite (i.e., significant reductions in train-vehicle collisions at highway-rail crossings that are interconnected to railroad warning devices – 398 train-vehicle collisions from 1987 thru 2000; 181 train-vehicle collisions from 2001 thru 2014).

As previously noted, the vast majority of pre-signal locations in Illinois have been designed and implemented based on previous FHWA recommendations and MUTCD editions, which provided flexibility and engineering judgment in the design and implementation of one of the most complex traffic control systems currently operating in the country.

This Office believes that implementing strict definitions and associated requirements in conjunction with these definitions for these types of complex systems is unwarranted, especially in light of the previously noted train-vehicle collision reduction within our state.

I reiterate our strong disagreement and opposition to the FHWA's official interpretation concerning this matter reversing its previous position concerning the definition of pre-signals. Furthermore, if these types of decisions, as well as specific proposed changes currently being finalized for chapters 4 and 8 at the NCUTCD level, are incorporated into future MUTCD versions, it appears that the MUTCD will become more of a design manual instead of its' intended purpose.

Please consider this letter as a formal request for the FHWA to rescind its decision concerning this matter.

If you have any questions, or need additional information, please contact me at (217) 557-1285 or mstead@icc.illinois.gov, or Brian Vercruysse, Senior Rail Safety Specialist, at (312) 636-7760 or bvercruy@icc.illinois.gov.

Very truly yours,

Michael E. Stead
Rail Safety Program Administrator

Enclosure
cc: Bruce Friedman, FHWA

Illinois Department of Transportation
2300 South Dirksen Parkway / Springfield, Illinois / 62764

March 18, 2015

Mr. Mark R. Kehrli, P.E.
Director, Office of Transportation Operations
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Dear Mr. Kehrli,

This is in response to your letter of November 5, 2015, Federal Highway Administration (FHWA) Official Ruling Number and Title: 8(09)-19(1) – Positioning of Signal Faces at Pre-Signals, provided as requested by Mr. Richard Campbell, President CTC Incorporated, seeking an official interpretation regarding pre-signal faces at railroad interconnected intersections.

The Illinois Department of Transportation (IDOT) concurs with the items raised in the Illinois Commerce Commission (ICC) letter dated December 19, 2014 requesting this FHWA Official Interpretation be rescinded (see attachment). This concurrence is based on our reading of the MUTCD language governing pre-signals along with current pre-signals design and operation in Illinois.

The official interpretation considers pre-signal faces to be primary signal faces, and hence, the requirements governing primary signal faces also apply to pre-signal faces including the forty foot minimum distance requirement between a stop line and a primary signal face (Section 4D.13, Figure 4D-4).

IDOT argues that by the unique nature of their design and operation, pre-signal faces are neither primary signal faces nor are they supplemental signal faces and they should be treated separately as pre-signals.

In the 2009 MUTCD Section 1A.13, Primary Signal Face is defined as follows:

"One of the required or recommended minimum number of signal faces for a given approach or separate turning movement, but not including near-side signal faces required as a result of the far-sided signal faces exceeding the maximum distance from the stop line."

Furthermore, the 2009 MUTCD Section 1A.13 defines Pre-Signals as follows:

"Traffic control signal faces that control traffic approaching a grade crossing in conjunction with the traffic control signal faces that control traffic approaching a highway-highway intersection beyond the tracks. Supplemental near-side traffic control signal faces for the highway-highway intersection are not

considered pre-signals. Pre-signals are typically used where the clear storage distance is insufficient to store one or more design vehicles."

In Illinois, the operation of the pre-signal and the downstream signal can be described under two scenarios, non-preempt and preempt. During non-preempt operation, the pre-signal display of red and the downstream signal display of red are separated by a fixed offset to keep the area between the tracks and interesting roadway free of vehicles. This is in accordance with the option in paragraph 14 of Section 8C.09 of the MUTCD. During preempt operation, the pre-signal continuously displays red and the downstream signal displays green for a pre-determined amount of time in order to clear vehicles from the tracks and to prevent additional vehicles from crossing the tracks in accordance with the standard in paragraph 12 of Section 8C.09 of the MUTCD.

While IDOT recognizes by this operation that pre-signals may at times display a different indication than the downstream signals, by definition the pre-signal controls approaching traffic in "conjunction" with the downstream signal faces. Therefore, a pre-signal operation is not completely independent of the downstream signal and the approach to the pre-signal would not necessarily be an independent approach and thus would not treat the pre-signal as a required primary signal face.

In Illinois, pre-signals and their associated stop bars are placed as close to the tracks as practical to provide motorists with greater sight distance of the tracks, to establish better compliance with traffic control devices and keeping tracks clear of vehicles, to reduce the occurrence of vehicles turning onto tracks, and to reduce the lack of understanding between solid red traffic signal indications and railroad flashers.

This placement of pre-signals in Illinois was established based on the results of a task force which included and was approved by the Illinois Division Office of FHWA. This placement was also in conformance with the 2000 and 2003 MUTCD definitions of pre-signal which both stated they were "supplemental highway traffic signal faces" and therefore not required to be forty feet from the associated stop bar. IDOT and ICC have consistently used these placement recommendations at nearly 100 locations determined to warrant pre-signals and feel it is the appropriate location for the safety of the motoring public.

If pre-signals are now considered primary signal faces, it would require moving the stop bar further away from the crossing or placing the pre-signal on the opposite side of the tracks. Placing the stop bar further away would require certain vehicles such as school buses to stop twice, once at the stop bar and again at the crossing. This could increase rear-end crashes at pre-signal locations due to additional stopping. If a pre-signal is located on the opposite side of the tracks, it could lead to motorists confusing and stopping on the tracks especially since Illinois motorists are used to stopping at the pre-signal. In addition, there may be locations where there is not enough physical room to install a pre-signal on the opposite side of the tracks due to the skew of railroad tracks or extreme close proximity of the tracks to the highway intersection.

Therefore, in consideration of the above assertions, IDOT respectfully argues that pre-signals are neither primary nor supplementary signal faces, but rather should be considered their own unique category. In addition, IDOT considers the placement of both the pre-signal indications and the associated stop bar together as close as practical to the tracks to be appropriate and safe. We respectfully request that in light of the arguments presented in this letter, the FHWA reconsider its official interpretation and rescind it.

If you have any questions or need additional information, please contact Yogesh Gautam, Traffic Systems Engineer, at (217) 782-3452, or by email at Yogesh.gautam@illinois.gov.

Thank you for your attention to this matter.

Sincerely,

Amy Eller, P.E.
Acting Engineer of Operations

Attachment

cc: Mike Stead, ICC