NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
4	1A.02	Traffic Control Devices - Definition		X		VDOT agrees with the inclusion of new list item, F, but suggests that the MUTCD should also specifically allow states to run other alerts similar to Amber Alerts, e.g. "Silver Alerts" or "Blue Alerts," where such alerts are authorized by state law.
5	1A.03	Target Road Users		X		Need to make clear that road users have varying abilities. For example, pedestrians can include children or the elderly, and nothing in the MUTCD supersedes state laws regarding duties of road users. Drivers and cyclists may be of all ages and experience levels or cycling abilities.
6	1A.04	Use of the MUTCD	X			VDOT supports the inclusion of new MUTCD language emphasizing the qualifications of MUTCD users. All traffic control device decisions by VDOT are made by engineers or those acting under the authority of an engineer. Note that some traffic control device decisions are made by localities, and this language could help reduce the complications that can ensue when localities make TCD decisions for reasons other than sound engineering judgment.
10	1B.02	State Adoption and Conformance			X	VDOT does not support the proposed Standard paragraph requiring that all agency documentation relative to traffic control devices is subject to FHWA approval. This could be interpreted as requiring FHWA Division approval of all state DOT policy statements, standard drawings, etc. that impact TCDs, which could significantly complicate and delay implementation of these documents. VDOT enjoys a positive working relationship with FHWA Virginia Division and we believe we have earned their trust that policies implemented by VDOT best meet the needs of VDOT and Virginia road users while still being in substantial compliance with the MUTCD
10	1B.02	State Adoption and Conformance			X	Many state DOTs use their state MUTCD/state Supplement as a "one stop shop" for all traffic control device requirements in that state, and update those documents more frequently than the federal MUTCD. If a state receives Interim Approval (IA) for a device and starts using that device, it will help the end users and improve conformance with the IA if the state is allowed to add the IA requirements directly into the state MUTCD/state supplement. Suggest instead adding a guidance to the effect of "if a state supplement references Interim Approval, then the document should make clear that the device is only approved under Interim Approval status".
10	1B.02	State Adoption and Conformance			X	The MUTCD needs to make clear that when states adopt either the MUTCD or state version thereof, the revised document applies to all projects and activities initiated after that adoption date. However it is often impractical (will result in cost impacts and/or delay of project delivery) to retroactively apply the new version of the document to projects/activities already in final design or construction. Similarly, recommend an option that the new MUTCD may be applied to individual activities as soon as it is issued, even if states have not yet formally adopted the new MUTCD. In other words a state may still officially be using the 2009 MUTCD, but could find it beneficial from a safety, operational, and/or cost standpoint to apply the new MUTCD to an individual project.
11	1B.03	Compliance of Devices		X		Recommend that FHWA establish a process to provide the National Committee on Uniform Traffic Control Devices (NCUTCD) a chance to comment on draft IA's and Policy Statements (particularly those that introduce new sign designs). This could reduce the likelihood that FHWA introduces a new document that doesn't holistically consider the needs of state/local road agencies.
11	1B.03 & 2C.25	Compliance of Devices			X	While VDOT recognizes the importance of minimizing risk of a potentially catastrophic overheight vehicle strike on an overpass, the 5-year implementation deadline for low clearance signs could be challenging to meet, particularly in instances where different agencies own the structure vs. the underpassing road. To make the implementation deadline simpler to address, recommend narrowing its scope to only apply to to structures over Interstates and National Highway System routes, or bridges that carry Interstate/NHS routes over other roads that have significant truck volumes; and to only apply to structures where the lowest clearance is 13'6" or below. Note: additional comments offered in 2C.25.
13	1B.06	Experimentation			X	The described Experimentation requirements should provide some flexibility to craft the level of detail required for review based on the risk associated with the Experimental device. In particular, the requirement for semiannual progress reports could be burdensome - in some situations annual reports may be sufficient. Recommend that the default assumption should be that Experimentations are allowed to stay in place beyond the end of the experimentation period unless FHWA determines that the Experimentation has created an unacceptable safety or operations issue. Another concern is that this language should acknowledge the benefits of driver simulation studies - a device that has shown success in driver simulations should still be considered Experimental when first implemented in real life, but has a low degree of risk to the public, and thus a reduced amount of future research would be appropriate.
14	1B.08	Interim Approvals	X			Strongly support the change to require each agency to be responsible for their Interim Approval implementation, without a need for state DOT oversight. To use the example of Rectangular Rapid Flashing Beacons (RRFBs), it was logistically difficult for a state DOT to keep track of how many localities within that state have used RRFBs. Moreover it was unclear what benefit that requirement provides, as in most states the state DOT does not and cannot keep a day-to-day "MUTCD police" watch over the actions of local road agencies.
16	1C.01	Definitions Used in this Manual		X		The definition of "shoulder" needs to clarify that pedestrians and bicyclists are allowed to ride on shoulders.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
17	1C.02	Definitions Used in this Manual			X	VDOT does not concur with deleting military bases, military branches of service, and government approved university or college from the list of entities for whom a pictograph is allowed. VDOT is not aware of any specific research that indicates such practice poses a safety risk and is not willing to have this difficult conversation with entities that have been allowed to have pictographs, or to have to explain to entities making new requests that the existing examples are non-compliant and will not be replaced.
19	1D.01	Purpose and Principles of TCDs	X			Strongly support the clarification that the MUTCD is intended for use by "reasonable and prudent" road users. This statement could help inoculate agencies against tort claims by drivers who were not behaving "reasonably or prudently".
25	1D.08	Public Domain, Copyrights, and Patents	X			Strongly support the proposed change, to reduce risk of future occurrences of situations like the RRFB situation from a few years ago that temporarily halted nationwide implementation of this important safety device until a patent issue was resolved.
27	1D.10	Abbreviations used on TCDs		X		Recommend adding language to explicitly allow postal abbreviations to be used when it is necessary to clarify the state in which a destination resides, i.e. "Charleston WV" (to avoid confusion with "Charleston SC").
28	1D.11	Placement and Operations of TCDs			X	This statement needs clarification that all devices that are required by standard shall be present before the road is opened to traffic. However devices that are only guidance or option (acknowledgement signs, post-interchange distance signs, road edge delineators, etc.) could potentially be considered "punch-list" items that may be installed after the road is opened to traffic. If traffic is being severely impacted by ongoing work zone activity, the sooner the final road can be opened to traffic the better.
29	2A.01	Function and Purpose of Signs		X		Strongly concur with this guidance statement; recommend expanding it to also note that changeable message signs can be an effective alternative to temporary or permanent "rules of the road" type signs when operated as per Part 2L. Agencies are often under considerable pressure to install permanent educational signs like "Buckle Up" or "Move Over", which results in sign clutter, additional rigid objects within the ROW, and cost impacts. Electronic message safety campaigns can achieve similar benefits, with little downside.
31	2A.04	Design of Signs		X		The proposed rulemaking does not address FHWA's plans for the Standard Highway Signs (SHS) publication. FHWA should commit to releasing an entirely new SHS publication once the new MUTCD is finalized. Moreover, FHWA should consider ways to modernize and make the SHS more user-friendly. Ideally FHWA would make freely available CADD-friendly digital files for each sign design, and make it easier for agencies to standardize design of typical major guide signs.
31	2A.04	Design of Signs			X	VDOT recommends that the proposed Standard be included as a Guidance statement with limited exceptions (e.g. alternative legends allowed at a specific location based on engineering judgment).
31	2A.04	Design of Signs		X		VDOT suggests allowing very small Quick Response (QR) codes/bar codes on the front of the sign, as long as they are contained entirely within the margin and 2" max height (same height requirements as are applied in the previous paragraph that allows sign codes or sign fabricator name to be located in the margin). At these very small sizes, the bar code/QR code will be invisible to the motorist. Also: recommend using a more generic term "scanning graphic" since "QR Code" is a proprietary technology.
31	2A.04	Design of Signs		X		Allow for official "symbol", not just official "seal" of the college institution. Many colleges have both seals and symbols, but the seal is often less recognized and/or difficult to read. Agree with banning symbols other than the official seal or symbol - for example athletic mascots shall not be used.
31	2A.04	Design of Signs				The NPA does not address the process for updating the Standard Highway Signs (SHS) publication. We would request that FHWA work to issue a revised SHS publication in conjunction with the Final Rule. FHWA should also strongly consider making freely available the vectorized design files used to create the SHS publication. Currently sign fabricators and DOTs must recreate sign designs from scratch based off the .pdf SHS publication, a very inefficient process and one that increases risk of errors. Also recommend publicizing graphics that standardize the interline spacing and margins of common interchange guide sign layouts (similar to PennDOT's Publication 111), to make it easier for agencies to interpret the SHS. Our agency has seen numerous examples of where designers have misinterpreted the SHS, leading to signs that either have suboptimal layouts from or a human factors standpoint, and/or have had excessive width or interline spacing, resulting in needless project expenditure.
32	2A.05	Shapes		X		Support the language, but expand to encompass all signs not just diamond-shaped signs. FHWA should review this language against Part 2G language that also applies to median-mounted managed lane signs, and develop consistent common-sense rules that allow signs to encroach into the shoulder adjacent to a barrier without requiring an excessively high mounting height that will raise the sign significantly higher than driver expectations. If rewritten, this section could also apply to HOV/managed lane regulation signs, allowing the language in Part 2G related to median-mounted managed lane signs to be eliminated as duplicative to Part 2A.
34	2A.08	Word Messages			X	Section 2A.08 needs to explicitly reference Clearview font, with detailed Clearview policy housed either in 2A.08 or 2E.14. Note: additional comments regarding Clearview are proposed in the response to item 647 of the NPA.
35	2A.09	Symbols	X			
37	2A.11	Enhanced Conspicuity for Standard Signs		X		Language on length of retroreflective strips should be guidance, not standard, as these strips merely add conspicuity to the sign but are not required to be present.
39	2A.14	Mounting Height		X		VDOT agrees with this change and recommends incorporating NCUTCD Ballot Item 20B-RW-01, Mounting Height and Lateral Placement of Signs, as the MUTCD needs to reflect mounting height of signs on steep cut slopes.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
41	2A.17	Posts and Mountings			X	VDOT is concerned that the language appears to ban placing solar panels (or other related electronics such as batteries) over the signs. Although the solar panel may cast some shadow across the sign face, there is little evidence that this will cause confusion for drivers. Signs already have shadows cast upon them from various adjacent sources (trees, poles, etc.). By prohibiting solar-powered beacons, agencies might incur significantly increased cost due to need to instead provide hard-wire powered beacons or a solar panel on a second pole (which is another fixed object in the roadside that presents a potential danger to drivers). These beacons are often important safety enhancements and a critical component of various FHWA and Agency safety initiatives. The use of solar panels will also enhance President Biden's and Governor Northam's mutual climate change goals by using a renewable power source that reduces carbon emissions.
42	2A.19	Excessive Use of Signs		X		Agree with adding a definition of "vanity" signs, but strengthen to state that vanity signs shall not be used. This will aid agencies in turning down requests often received for vanity signs/sign messages acknowledging accomplishments like sports trophies (e.g. NCAA championship winners) and personal accomplishments (e.g. "Miss America Winner").
43	2A.20	Retroreflection and Illumination		X		VDOT agrees with this change and recommends incorporating NCUTCD Ballot Item 20B-RW-03, Electronic Display of Signs.
44	2A.21	Maintaining Minimum Retroreflectivity			X	VDOT disagrees with the language, "[...] signs that are below the minimum levels should be replaced." Instead, VDOT recommends, "[...] signs that are identified through the agency's management method as being below the minimum levels should be scheduled for replacement." The agency methods allow for periodic assessment of signs, so it is not practical to identify a sign the instant it falls below minimum values. Moreover it is impractical to instantly replace failed signs.
52	2B.06	General Considerations		X		VDOT would like FHWA to provide clarification on the definition of a "2-leg intersection" as it relates to a Yield Control intersection. In addition, VDOT supports the proposed NPA language "yield of stop signs shall not be used for speed control".
66	2B.20	In-Street and Overhead Pedestrian Crossing Signs		X		The in-street pedestrian signs should be allowed as approved by NCUTCD, including in the gutter pan or on top of the curb. Signs should also be allowed on lane lines for both one-way and two-way roads.
67	2B.21	Speed Limit Signs		X		VDOT supports the proposed changes to 2B.21. NOTE: The NPA preamble also noted two specific comments/questions they posed to responders. Response to preamble question 1: The 85th-percentile speed still has value as a benchmark for a reasonable upper threshold for the speed limit, in conjunction with the consideration of the other factors determining how much adjustment below the 85th is appropriate. It is important to note that maximum speed limits are set by statute. Considering the overall trends on Virginia roads regarding speed limits over the years, it does not appear they are increasing and certainly not increasing as a result of "chasing the 85th-percentile speed. More often or not, the recommended speed limit is at least 5 mph below the 85th-percentile speed. Although the pace speed may be a preferable threshold, it seemsthat would likewise tend to go up over time in relation to the posted speed limit. Response to preamble question 2: USLIMITS 2 is overall a crude approach to setting speed limits as it only allows for the consideration of the average characteristics over a road section (e.g. development type/density, crash/injury rates etc.) on a roadway segment not the spatial arrangement or spot locations, nor does it distinguish between other features such as the types of crashes, traffic mix etc. Additionally, the recommended speed limit from this system tends to the 85th-percentile speed except where an extremely high crash rate and/or development density etc. is introduced.
73	2B.28	Mandatory movement Lane Control Signs		X		VDOT believes that the use of DO NOT DRIVE ON SHOULDER sign should be an Option, not a Guidance statement. Even if drivers do occasionally drive on the shoulder, it should be at the agency's discretion to judge whether this is creating a significant operational or safety issue.
79	2B.38	Keep Right Except To Pass and Slower Traffic Keep Right Signs		X		Recommend referring users back to new guidance in 2A.01 recommending against frequent use of "rules of road" signs. Agencies often get considerable public pressure to install multiple signs of these types. Also recommend guidance that the "Slower Traffic Keep Right" sign be limited to locations where there is an issue with drivers driving below the speed limit in the left-hand lane, not drivers driving below "the normal speed of traffic".
80	2B.40	Keep Right and Keep Left Signs		X		VDOT recommends that FHWA revise the proposed Standard statement "shall be visible to traffic on the divided highway and angled toward..." to a guidance statement. There may be times where the signs are highly visible without needing to be "angled toward" the approach. Moreover, angling can be challenging for agencies that rely on square rather than round sign posts if another sign is co-located with the KEEP RIGHT sign on the same post, as square posts cannot accommodate signs at angles other than 90 degrees to each other. In such situations, agencies would have to mount the other sign on a separate post, increasing the number of fixed objects in the median nose.
84	2B.47	Do Not Enter Sign		X		Recommend that only red LEDs, not white LEDs, be allowed in the border of Do Not Enter, Wrong Way, and Stop signs; also consider whether Yield signs should use red or white LEDs.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
87	2B.50	One Way Signs			X	The R6-4 Roundabout Directional Arrow sign (black chevrons on white background) should not be removed from the MUTCD. The One-Direction Large Arrow sign should be reserved for sharp curves as has been the case through numerous previous MUTCDs. For roundabouts, a white-background regulatory sign is essential since the intent is to legally prohibit drivers from traversing the roundabout clockwise.
99	2B.60	Traffic Signal Signs			X	Revise the "Left Turn Yield on Flashing Yellow Arrow" sign to use a graphical yellow arrow instead of the words "yellow arrow" as in the NCUTCD recommendation from 2019.
99	2B.60	Traffic Signal Signs		X		This sign may be better if it were modeled after the R10-15 sign that is used for turning conflicts with non-motorized traffic. Note that the R10-15 sign may be used for either left-turning or right-turning traffic conflicts.
102	2B.66	Weight Limit Signs		X		VDOT suggests also allowing for a through arrow to be used instead of the advisory distance ahead legend. Additionally, the "ahead" legend should be regulatory (white background) not yellow.
102	2B.66	Weight Limit Signs			X	VDOT believes the proposed emergency vehicle weight limit sign is wordy, is confusing for drivers because of the need to interpret weight limits per axle and per gross, and could confuse drivers who might think the phrase "emergency vehicle weight limit" means there is an emergency and therefore the following weight limits apply to all vehicles. Additionally, R12-7aP plaque cannot be used beneath most weight limit signs without having too much information for a single post. R12-7 sign should use the fire truck silhouette as has been recommended by NCUTCD's regulatory/warning signs committee.
103	2B.67	Vehicle Inspection Area Signs			X	VDOT disagrees with the deletion of the Option statement allowing the reverse color combinations, i.e white text on black background.
105	2B.71	Move Over or Reduce Speed Sign		X		Reference should be made to proposed 2A language recommending against use of permanent static "rules of the road" signs. At this point "Move Over" is the law in almost every state.
106	2B.72	Minor Crashes Move Vehicles from Travel Lanes Sign		X		Reference should be made to proposed 2A language recommending against use of permanent static "rules of the road" signs. At this point "Move It" fender bender laws are on the books in almost every state.
107	2B.73	No Hand-Held Phones by Driver Sign		X		Reference should be made to proposed 2A language recommending against use of permanent static "rules of the road" signs. At this point no-handheld-device laws are on the books in almost every state.
114	2C.04	Placement of Warning Signs			X	VDOT disagrees with the deletion of the second sentence of P3 and suggests keeping the guidance about not placing signs too far in advance.
114	2C.04	Placement of Warning Signs			X	VDOT is concerned that the changes to Table 2C-3 in the "0 mph" column (pertaining to signal/stop/yield ahead sign placement. This rule change will result in agencies having thousands of "stop ahead", etc. signs that would need to be reset gradually through attrition to meet the new MUTCD requirements, when there isn't clear evidence that there are issues with the current sign placement requirements. Note that when a sign is knocked down or damaged, most road agencies simply replace in the same location, and are not set up to reevaluate proper placement in all such situations.
116	2C.06	Device Selection for Changes in Horizontoal Alignment			X	Agencies often do not have 85th percentile speed data readily available, and the field studies necessary to collect such data are often laborious. The Standard needs to be reworded to allow agencies flexibility to use either the posted/statutory or 85th percentile speed when determining the appropriate curve warning signage.
123	2C.13	Vehicle Speed Feedback Sign		X		There needs to be an option to allow a "SLOW DOWN" message to be displayed when the driver's speed is more than 10 mph over the speed limit.
128	2C.25	Low Clearance Signs			X	Given the five-year compliance date, there needs to be an explicit threshold of when clearance "varies greatly" thus requiring multiple signs over each lane. Additionally, there needs to be an option to allow for post-mounted signs with supplemental plaques (downward diagonal arrow or "left/right lane" legend) where it is impractical or infeasible to attach a sign directly to the overpassing structure. For example, in Virginia some VDOT roads pass under historic stone arch bridges owned by the National Park Service for Blue Ridge Pkwy/Skyline Dr - it would be very difficult for VDOT to get permission to attach signs to those bridges. Similar concerns exist for railroad overpasses.
164	2D.29	Route Sign Assemblies		X		This should be listed as an Option as a Guide sign could be too large for limited ROW. Perhaps the language can be included in a Support statement as to when the option makes sense to encourage use where there are multiple similar cardinal direction panels or arrows.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
171	2D.41	Destination Signs at Intersections with Indirect Turning Movements	X			Figure 2D-14 (sheet 1) all sign panels should be rotated to read in the direction of travel.
172	2D.45	Street Name Signs			X	Table 2D-5 contradicts Table 2D-2 regarding letter height overhead street name signs (OSNS). The MUTCD should allow OSNS letter heights to be as per Table 2D-2. 12" text is unnecessary for these OSNS, and can present substantial engineering challenges due to both the structural capacity of mast arm/span wire signal supports, and restricted lateral width due to required signal head placement. For new construction, the need to accommodate OSNS with 12" text height substantially increases the overall wind loading on mast arm structures, leading to additional cost due to the need for bulkier steel structures and larger foundations. This in turn impedes the number of life-cycle traffic structure replacements and needed safety improvements an agency can deliver in any given year. Additionally, agencies may be forced to omit OSNS entirely at some traffic signals, if the traffic signal structures are unable to accommodate the large signs mandated by the NPA requirements.
172	2D.45	Street Name Signs		X		Recommend deleting the phrase "especially in urban areas" in the paragraph recommending that signs display legend on both sides of the sign.
176	2D.51	Weigh Station Signing	X			Recommend showing in Figure 2D-24 an illustration of the changeable OPEN/CLOSED supplemental sign panel.
179	2D.54	Emergency and Slow Vehicle Turn-Out Signs		X		MUTCD needs to allow "emergency pull off" to be used in lieu of "emergency turn out".
184	2D.59	Emergency Route Signs		X		Recommend adopting NCUTCD's suggestion of "Incident Bypass" rather than "Emergency Route".
186	2E.01	Scope of Freeway and Expressway Design Standards		X		Recommend moving the information about signage in tunnels to its own section in Part 1, as tunnels also place constraints on other TCDs (i.e. lane use control signals). Also note that this language applies to other locations with unique space constraints like through truss structures and drawbridges.
190	2E.12	Size and Style of Letters and Signs			X	VDOT endorses allowing Clearview as an option for guide signs, and addressing it in the body of the MUTCD rather than in Appendix A(1) where it can be easily overlooked. In addition, the following changes need to be made to the proposed Appendix A(1) standards: (1) Clearview should be allowed for all lettering on a guide sign, including the all-caps lettering such as cardinal direction. There is no documented worsening of sign legibility, and this will reduce the man-hours necessary to develop sign layouts using CADD-based sign design programs, (2) NPA needs to make explicitly clear that 5-W-R lettering is allowed where structural constraints prohibit use of 5-W lettering, (3) there is no reason to use greater interline spacing for Clearview signs than signs with Standard Highway Lettering, as the original Clearview research which led to IA-5 approval did not use different interline lettering, and this would significantly increase height and thus cost of signs using Clearview, (4) language on ratio of upper-case to lower-case height should be guidance not standard, as some CADD-based sign design software programs will result in 82% instead of 84% ratio based on the recommendations of Clearview's original designer, and it is difficult to believe that 82% instead of 84% will have any appreciable impact on legibility, (5) recommend using the term "Clearview" to avoid user confusion about what is meant by "E (Modified) Alternate", and (6) there is no reason to prohibit use of Clearview for major guide signs on conventional roads.
190	2E.12	Size and Style of Letters and Signs			X	20" lettering should only be used for ground mounted signs, even at "major" interchanges. There is no known research documenting a need for 20" lettering for overhead signs; that use should be reserved for post-mounted signs which are inherently less visible to drivers on freeways. **This change results in an estimated 40% increase in the size of the sign**, which in turn can significantly increases costs (both for initial installation and subsequent lifecycle replacement) as the increased wind loading can substantially increase the cost of truss/cantilever sign structures and their foundations. The increased cost in turn would reduce the number of safety and capacity improvement projects that VDOT can deliver, and also make it more challenging for VDOT to keep up with needed life-cycle replacement of existing aged truss and cantilever sign structures.
190	2E.12	Size and Style of Letters and Signs			X	FHWA needs to more precisely define "major" interchanges as "interchanges with other freeways or principal arterials". The current definition is subjective, to the point that almost every single interchange in major metro areas could arguably qualify. Given the proposed language will result in major differences in overhead sign size/ cost for major vs. moderate interchanges, the imprecise definition could result in dispute between the owner agency and the contractor on Design-Build and Public-Private-Partnership type contracts.
195	2E.18	Arrows for Interchange Guide Signs			X	Disagree with this language, as the decision about whether to place the arrow to the right or below of the legend depends on several site-specific constraints such as available ROW, structural capacity, etc. Placement to the right is often desirable because it results in less wasted green space and a shorter structure; if placement below the legend is mandated, then in certain circumstances that could lead to additional cost due to the need for larger signs, bulkier sign structure, and wider/deeper foundation. While there is currently inconsistency in arrow placement on such signs, there is no known evidence this inconsistency results in confusion for human or machine vision vehicles.

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211	2E.36	C-D Roadways for Successive Interchanges	X			Figure 2E-32 is missing the actual gore exit sign at the CD road for each particular exit.
214 & 216	2E.40 & 2E.42	Arrow-Per-Lane Guide Signs			X	VDOT recommends allowing shorter arrows in Table 2E-5 for the Arrow-Per-Lane signs as adopted by NCUTCD in 2012, and also allowing arrows to be omitted for the lanes that only serve the mainline through movement (for example, in Figure 2E-36, omitting the two left-most arrows for I-84 West/Waterbury, and only showing the through/right arrow and right turn arrow for Exit 49/Plainville; a confirmation "84 West Waterbury" sign without arrows could still be provided). This would result in a sign that is not excessively large but still provides effective guidance to drivers. This translates to significant cost savings as there are less structural needs to accommodate the sign, less cost to fabricate the sign, and less overall maintenance costs for sign type that is already gigantic in size. VDOT previously estimated a $90,000 cost per sign structure impact by using shorter arrows (and using 16" instead of 20" lettering) for a completed project in Richmond. Also note that the NPA requirements would make it very difficult to perform lifecycle replacements of existing signs with deteriorating sheeting, to the detriment of drivers.
220	2E.50	Supplemental Guide Signs			X	VDOT is opposed to this change to the MUTCD and would prefer that the proposed shall condition be changed to a should statement due to the fact as it states in the current MUTCD pictographs are acceptable to be used for governmental facilities, colleges, and universities only. Pictographs on Supplemental Guide Signs are a useful tool to convey information to the traveling public through the use of a recognizable pictograph. See response to NPA item #17 (1C.02 - definition of "pictograph") for more information.
223	2E.53	Weigh Station Signing		X		Recommend showing in Figure 2E-61 an illustration of the changeable OPEN/CLOSED supplemental sign panel.
231	2F.04	Regulatory Signs for Toll Plazas		X		VDOT recommends providing a figure showing an example of this proposed change to Option P8 to guidance, as this change could create confusion with applicability of speed limits if not all lanes are marked.
236	2F.12	Toll Facility Plaza Guide Signs		X		There needs to be consistency between the text that requires the symbol, and the figure (Figure 2F-6 and Figure 2F-7) that indicates the symbol is still optional.
250	2G.20	Signs for Part-time Travel on a Shoulder		X		Recommend adding figure showing how to sign and use pavement markings for a left side shoulder operation.
N/A	2H.06	Geographical Feature Signs			X	VDOT supports continuing to allow display of watershed information signage on I-3 river identification signs. This additional environmental information helps the traveling public understand what watersheds they may be impacting in the areas they travel on a regular basis. VDOT has posted watershed information on the same sign assembly as the I-3 sign for many years, so there is thus no additional fixed object and minimal adverse impact to road users.
263	2H.07	State Welcome Signs		X		VDOT recommends changing the Standard requirement into a Guidance statement on placing State Welcome Signs only as independent, post-mounted sign assemblies. There are locations (e.g. I-495/Woodrow Wilson Bridge between Maryland and Virginia) where post-mounted sign assemblies are not feasible, and the only other option would be to place the State Welcome Sign 0.5 mile or more away from the state line. We also disagree with NPA's statement that these signs should be located laterally further from the road than other signs, as that is often impractical given Right of Way constraints.
264	2H.08	Future Interstate Signs		X		To help dissuade the misuse of these signs, the NPA should include a standard prohibiting use of these signs until the future Interstate is actively under construction, with formal Interstate redesignation slated to occur as soon as the project is complete. Some existing "Future Interstate" signs have been placed decades ago, with still no concrete plans in place to build the multibillion dollar projects necessary to actually implement the Interstate designation; in such instances the signs serve little legitimate traffic control device purpose.
265	2H.09	Project Information Signs		X		VDOT supports these signs as they inform road users with key information about the road construction work present on the highway system, notably managing expectations on project outcomes, schedules, funding, delivery partners, and/or project websites. VDOT recommends an additional guidance statement to recommend that the legends of these signs be used judiciously as to not overwhelm road users.
268	2H.12	Enhanced Reference Location Signs		X		The new proposed Standard statement ends with the words "...decimal point and a zero numeral." For consistency, VDOT recommends adding the words "and a zero numeral" to the Standard statement following the new proposed Standard statement so that it reads "...decimal point and a zero numeral" as well.
271	2H.14	Alternative Fuel Corridor Sign			X	"Alternative Fuels Corridor" (AFC) signs should be allowed to be installed on designated corirdors even if trailblazer signs (General Motorist Service or Specific Service/Logo) signs are not in place. vehicle. VDOT believes that the primary beneficiaries of AFC signs are fossil fuel drivers that regularly drive the corridor who are alerted by these signs that they could consider switching to an AF vehicle; the signs don't provide any actionable information to AF vehicle drivers . It is both impractical and unnecessary to have trailblazer signs up first, particularly in VA where General Motorist Service and Logo Signs are managed by a separate program and require individual businesses to apply and pay an application fee; VDOT cannot simply install GMS signs for alternative fuel charging stations as that would treat them differently than well-established procedures for traditional gas stations and other eligible categories.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
284	2J.01 & 2J.02	Elegibility			X	Recommend rewording "gas" as "fuel" or explicitly adding "EV charging" as a separate category for participation in the logo sign program. The logo program needs to allow for display of EV network charging company logos (EVGo, ChargePoint, etc.), as long as reasonable restrictions are in place similar to those for traditional fuel stations. For example EV charging stations must be publicly accessible for a minimum number of hours/days, and offer modern sanitary facilities and public water. Additionally, alternative fuel stations must be universally available to all vehicles of that fuel type.
284	2J.01 & 2J.02	Elegibility			X	Food/lodging/camping businesses should be allowed to offer a supplemental message at the bottom of the logo plate, in addition to traditional gas stations, so that drivers are provided useful information that the food/lodging/camping business will also provide them an opportunity to recharge their vehicle, and reduce the risk of drivers get stranded because they run out of charge or other alternative fuel.
284	2J.01 & 2J.02	Elegibility		X		Pay telephones have become quite rare, and VDOT believes driver expectations are sufficiently met if a participating business does not have a water fountain but does have bottled water available for purchase. Recommend (a) eliminating any mention of public telephones from elegibility requirements, and (b) phrasing the water requirement as "drinking water available for free or purchase".
285	2J.02	Application	X			VDOT concurs with this proposed language regarding Attraction logo signs as a should condition, however, VDOT would like for the FHWA to understand that that the utilization of the Attractions Logos helps to control sign clutter, by reducing the requests for Supplemental Guide Signs.
296	2L.02	Applications of Changeable Message Signs			X	VDOT has seen very positive benefits from its program of running humorous messages that are tied to a particular safety theme. A humorous message resonates more with road users than bland slogans like "Click It or Ticket". Recommend that these messages be allowed, subject to the following restrictions: --the message's intent should be able to be understood even if the road user does not get the pop culture reference or joke --proposed messages are vetted by a diverse committee that includes traffic engineering, marketing, and law enforcement perspectives, with the goal of only using messages that are likely to be widely understood and cannot be inadvertently misinterpreted --Message should be targeted to a single specific behavior (speeding, seatbelts, distracted driving,etc.) and should not have a generic safety message --Where practical, messages should be timed to coincide with NHSTA's safety messaging calendar.
296	2L.02	Applications of Changeable Message Signs			X	VDOT believes that display of injury/fatality statistics should be allowed, as these sobering statistics can induce drivers to reflect on the dangerous activity they are currently undertaking. Even if the statistics do not influence a direct change in the driver's behavior, it may induce the driver to be more generally supportive of laws and initiatives designed to reduce fatalities.
296	2L.02	Applications of Changeable Message Signs			X	"Silver" and "Blue" alerts are written into the laws of many states. Road agencies must be sensitive to the strong emotions surrounding a missing senior citizen or suspected law enforcement officer murderer, and politically it is difficult for road agencies to turn down such requests solely because of an MUTCD standard. Therefore the MUTCD needs to allow for these alerts. We agree that Amber, etc. alerts should not preempt messages about critical situations ahead (stopped/slowed traffic, crash, etc.), however the guidance needs to be reworded to allow Amber, etc. alerts to preempt travel time messages during non-congested conditions or other non-critical messages. We agree with disallowing information like vehicle make/model/license plate number. However recommend allowing the display of URLs on CMS, solely in the case of Amber/etc. alerts, and limited to simple URLs like "www.missingkids.org" with no forward slashes. A message like "Amber Alert In Effect" with no other information would do little to aid in the quick locating of the missing child/senior citizen/etc.
312	2N.02	Design and Use of Emergency Management Signs			X	VDOT recommends deleting this revision entirely or change it to a Guidance statement. The very nature of an "emergency" implies that agencies may not have sufficient time nor manpower to devote to such an effort as to remove and/or cover permanent signs. Furthermore, emergency situations typically last only days or weeks.

NPA Item	Section in NPA	Title	Agree with text as proposed	Agree with concept; see comments	Disagree; see comments	VDOT Comments
320	3A.04	Functions, Widths, and Patterns of Longitudinal Pavement Markings			X	VDOT agrees that under certain circumstances 6" inch edge lines cost-effectively provide significant safety benefit for both human and machine vision vehicles. For that reason, VDOT supports adoption of the NCUTCD 19B-MRK-02 item which states that 6" edge lines shall be used on roads with 55+ speed limit and at least 6000 ADT, and all freeways and expressways. However, the NPA goes well beyond NCUTCD's item in several ways that increase the cost impact by orders of magnitude, with little further quantifiable reduction in crash risk. As the third-largest state DOT, VDOT estimates a **$7 million- $15 million/year impact to VDOT** to fully meet the NPA requirements. ($7M/year represents the fiscal impact of adopting the NCUTCD recommendations regarding line widths, which VDOT supports; $15M/year represents the cost of the NPA language as currently proposed.) FHWA appears to have significantly underestimated the cost impacts of these changes in their Assessment of Economic Impacts. The analysis appears to have considered only one-time costs, but not the ongoing life-cycle costs. This economic impact may grow even greater once FHWA finalizes the separate Proposed Rule regarding pavement marking retroreflectivity maintenance. While VDOT supports the goals of transitioning TCDs to provide support for the ADAS-equipped vehicles of today and emerging C/AV technologies, FHWA must prioritize changes that benefit both human and machine vision, given that for the near future the significant majority of vehicles on the road will still be relying exclusively on human vision.
320	3A.04	Functions, Widths, and Patterns of Longitudinal Pavement Markings			X	In particular, VDOT notes the following: 1) The NPA would require center lines on all 45+ mph roads to be 6". For double yellow lines, this would increase their total width by 4", thus narrowing the effective lane width. A typical double yellow line with (2) 4-inch lines should provide adequate conspicuity for both human and machine vision. 2) FHWA has proposed no ADT threshold. Many jurisdictions have a policy of applying longitudinal lines on roads well below 6000 ADT, so this NPA requirement would substantially increase cost impacts with less corresponding safety benefit. 3) FHWA's proposed 45+ mph threshold is substantially less than NCUTCD's approved a 55+ mph threshold. At slower speeds, there is less of a need for wider markings when considering both human and machine vision. 4) It is often impractical for paint trucks to switch nozzles from 4" to 6" widths (or vice versa) as a road transitions from higher speed zone to lower speed zone. This further amplifies the cost impacts of the NPA. 5) Many roads are marked with edge lines and/or center lines even though their ADTs fall below the standard/guidance thresholds for such markings. In order to mitigate the fiscal impacts of this NPA, some agencies may be forced to abandon these markings, to the detriment of both human- and machine-vision vehicle operations.
320	3A.04	Functions, Widths, and Patterns of Longitudinal Pavement Markings			X	Other comments on NPA Section 3A.04: (1) VDOT supports retaining the definition of a broken lane line as an approximately 10 ft line with 30 ft gap, as there is currently no research demonstrating a safety benefit of 15ft/25 ft cycle (as was proposed by NCUTCD for higher-speed roads to benefit CAV operation). (2) The NPA definition of maximum gap between double yellow lines is vague - recommend establishing guidance establishing that the maximum gap should be 8 inches. Note that the gap must be wide enough to accommodate the different marker styles currently on the market, such as plastic inlaid "cradle" markers (Ennis-Flint Model 201 marker or similar) which require a 5.25-inch groove width.
329	3B.09	Edge Line Pavement Markings			X	NPA Section 3B.09 partially conflicts with NPA Section 3A.04; line width guidance should be contained solely in 3A.04.
N/A	3B.23	Lane-Use Arrows			X	VDOT recommends keeping the 3B.23 language "where engineering judgment determines that physical conditions or other markings (such as a dotted extension of the lane line through the taper into the turn bay) clearly discourages unintentional use of a turn bay by through vehicles". The NPA did not list this as one of the 647 "significant" changes, but this change will have significant cost implications for those agencies who currently have a common practice (particularly in rural areas) of omitting turn arrows in turn lanes that lead into low-volume streets or crossovers, as allowed by the current MUTCD. **VDOT estimates a $0.5 million/year fiscal impact to our agency from this change.** There is little evidence that the lack of arrows leads drivers to confuse the turn lane for a thru lane (particularly for left turn lanes cut into the median of divided highways), as long as a dotted line is present through the taper area and as long as the turn lane is not unusually long.

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340	3B.25	Chevron and Diagonal Markings			X	Chevron markings should remain an option not a guidance. **VDOT estimates this proposed change will cost our agency $2.4 million per year.** While anecdotally chevrons provide important safety benefits at gore areas with specific risk factors (e.g. left-hand exits, unusually large neutral areas, etc.), there is no known safety study quantifying Crash Modification Factor for this treatment. Moreover, as long as the gore area makes appropriate use of longitudinal lines (including dotted line extensions as per the NPA) then chevron markings should not be needed by machine vision. Note that the NPA is incorrect when it states that NCUTCD approved this change; the final NCUTCD 19B-MRK-02 item did not change the optional status of chevron markings. We would also note that the NPA language would apply to ALL neutral areas, including entrance ramps (where there is much less need than at exit ramps), gore areas on lower-speed roads, and all channelizing islands. Lastly, we would note that chevron markings on freeways are very challenging from a work zone standpoint, and there are significant worker safety implications to recommending these markings be used in all gore areas. FHWA should have also included 3B.25 in its Assessment of Economic Impacts.
346	3C.01	General		X		VDOT generally concurs with the changes and recommends an editorial correction rewrite to the Standard statement to avoid misinterpretations. Editorial Wording: "At non-intersection crossings, crosswalk markings shall be provided in order to establish that a crosswalk exists at that location."
347	3C.02	Applications of Crosswalk Markings		X		VDOT supports most of the revisions. For emphasis, the list of criteria should include: "The density and proximity of pedestrian and bicycle traffic generators".
349	3C.04	Basic Crosswalks		X		VDOT generally concurs with comments: Figure C-1 change "Perpendicular" to "Ladder" or add "(Ladder)" and show 6' dimension as per NCUTCD approval 11A-MKG-1. Also, recommend using the term "ladder" instead of "perpendicular" and "piano keys" (or "contintental") instead of "longitudinal bars", as such terms are much more easily understood by both the layman and practitioners. (For example, piano keys crosswalks have bars that are longitudinal from a driver's perspective but transverse from a pedestrian's perspective).
383	4F.15	Signal Indications for Protected/Permissive Mode		X		VDOT supports the optional use of three-section signal faces for flashing arrow applications. NPA language appears to permit both the use of a three-section signal face where a combined signal indication is used for the Yellow Arrow /Flashing Yellow Arrow AND the Green Arrow/Flashing yellow Arrow. The MUTCD should promote uniformity and standardize a single three-section signal face arrangement for this condition. VDOT supports the arrangement identified in IA-17, and supported by the accompanying research, where the middle section can display both the Yellow Arrow /Flashing Yellow Arrow.
383	4F.02 - 4F.09 - 4F.16	Signal Indications for Left Turn Movements			X	VDOT supports the optional use of a five-section signal face where the Yellow Arrow and Flashing Yellow Arrow will be displayed in the same section for applications with combined through/shared lanes. The NPA language restricts the use of this signal face to approaches with both an exclusive left-turn lane and a shared left/though lane. The option should be applicable to approaches with a shared left/through lane without an exclusive left-turn lane. This additional flexibility will enable enhanced uniformity through use of the flashing yellow arrow to indicate permissive left-turns.
390	4C.02	Signal Warrants			X	VDOT does not agree with changing the applications of signal warrant criterion from standard to guidance. While appreciating FHWA's intent to provide additional flexibilities, this change may instead increase non-engineering based pressure on agencies to approve signals at locations where the signal warrant criterion is not me. Established standards are needed to support consistent engineering decision making, otherwise it is difficult to arrive at a final decision when supported by guidance. This change also appears to conflict with the definition of "warrant" in Part 1 noting that, "a warrant describes a threshold condition based upon average or normal conditions that, if found to be satisfied as part of an engineering study, shall result in analysis of other traffic conditions or factors to determine whether a traffic control device of other improvement is justified".
394	4D.01	General			X	VDOT appreciates the intent to consider all modes of traffic at signalized intersections, however this standard should be more targeted to require consideration of modes of traffic applicable at a specific location. For example, it would not be necessary to consider many modes of traffic for signals on limited access highways where many modes such as pedestrians, bicyclists, etc. are not permitted. If this language must be retained, we would suggest adding the qualifier, "all modes that are legally permitted at that traffic signal."
394	4D.01	General			X	We disagree with this change, as 300ft is within the influence area of an intersection. If a "midblock" crosswalk is allowed at this distance then there should also be a requirement to consider this as part of the nearest signalized intersection, and require an engineering study for signal coordination and safety. If not then this should not be changed from a Standard to Guidance.
403	4E.01	Signal Indications - Design			X	It is unclear if the deletion of the reference to preemption confirmation lights is intended to prohibit the use of preemption confirmation lights while later text in Section 4F.19 regarding a "distinctive indication" appear to allow their use. VDOT supports the continued allowance of preemption confirmation lights. These lights are often used in Virginia and are critical to our emergency response partners. If these lights are no longer permitted, VDOT would have to spend valuable resources to remove any existing installations and coordinate with numerous effected emergency response agencies.
405	4F.01	Application of Steady and Flashing Signal Indications	X			VDOT strongly supports the option to expand the use straight through Green Arrow signals. This expansion will be another useful tool to use to discourage wrong way entry, especially at exit ramps.

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412	4F.16	Signal Indications for Approaches with No Thru Movement		X		VDOT supports the option to allow a continuous display of a steady circular Red indication at locations where there is no through movement from a given approach. VDOT also supports the intent of the new standard to prohibit use of circular Green and Yellow indications at specific locations where there is no through movement (speed limit 35 mph or higher, opposite an exit ramp) to more clearly indicate that a turn is required. VDOT is concerned that many existing locations with single or two lane (exclusive right, exclusive left) approaches where this new standard would apply currently use two signal faces. To meet this new standard as well as other standard requiring two signal faces for the major movement would result in three (or more) signal faces being needed and many existing ancillary signal support structures could not accommodate the additional loading. Costly new ancillary signal support structures would be needed. Additionally, flexibility should be provided to exempt these situations from requiring two signal faces for the major movement, permitting the use of two signal faces with arrow indications, one for right turns and one for left turns.
413	4F.17	Yellow Change and Red Clearance Intervals			X	VDOT, along with many agencies, has expressed concerns with the resulting timings produced when following the guidance in the 2020 “Guidelines for Determining Traffic Signal Change and Clearance Intervals: A Recommended Practice of the Institute of Transportation Engineers”. The proposed text deletes references to ITE’s “Traffic Control Device Handbook” and ITE’s “Manual of Traffic Signal Design”, leaving the 2020 ITE Recommended Practice as the only cited reference for engineering practices for determining the duration of yellow change and red clearance intervals. Other references, including the ones noted in strikethrough, note other practices for timing yellow change and red clearance intervals. Additional references should be cited, otherwise the ITE Recommended Practice can be inferred as the sole, FHWA endorsed engineering practice that complies with the preceding standard statements mandating that yellow change and red clearance intervals “…shall be determined using engineering practices”.
414	4F.19	Preemption Control of Traffic Control Signals		X		Generally, VDOT supports the proposed standard to not terminate a pedestrian clearance interval as part of a transition to preemption except for those transitions associated with boats or trains in an effort to enhance safety for vulnerable users, including those with disabilities. However, many signals in urban and suburban settings are very wide, with multi-lane approaches resulting in long-duration pedestrian clearance interval timings. Regardless of the crossing time for an individual pedestrian, the full pedestrian clearance interval must be provided. VDOT is concerned that fulfilling the full pedestrian clearance times at such intersections could significantly increase emergency response times. This item should be reclassified as a guidance statement with additional support statements to allow agencies flexibility to operate preemption based on site-specific factors. Further, with technology evolution solutions may soon exist (if they don’t already) to allow in-intersection pedestrian detection to support real-time preemption operations decision making, enhanced emergency signal routing notification that may pause pedestrian phases until the emergency vehicle has passed, and other concept. Applying this as a blanket standard would not allow such future technology applications to be considered and would discourage their development.
414	4F.19	Preemption Control of Traffic Control Signals		X		VDOT supports the option related to use of distinctive indication to inform escort stakeholders that a signal has been preempted due to a train. VDOT does not support inclusion of the examples of escort situations such as during parades and funerals, which could be interpreted to infer federal support of use of the road system for such purposes without acknowledging existing associated review and approval processes for those uses.
414	4F.19	Preemption Control of Traffic Control Signals		X		VDOT generally support use of back-up power systems to operate signals during power outages. The additional guidance statement recommending such a system be used in specific situations and be designed to operate for "a minimum operating period sufficient to allow the implementation of alternate traffic control measures during a power outage" should be more fully defined. Specifically, the terms “alternate traffic control measures” and “a minimum operating period” could have varying interpretations and subject an agency to increased risk of liability due to the imprecise definition.
431	4K.05	Extended Push Button Press Features		X		With regards to volume adjustment - the standard statement regarding automatic volume adjustment for Accessible Pedestrian Signals (APS) should be reworded to clarify that the volume adjustment can be done in intervals, not an automatic increase to 100 decibels (dBA). Recommend rewording as “Automatic volume adjustment up to but not greater than 100 dBA in response to ambient sound levels shall be provided."
432	4L	RRFBs		X		VDOT recommends a different audible message "Wait for Traffic to Stop and then Cross with Caution" as an alternative to or instead of "Yellow Lights are Flashing; Yellow Lights are Flashing".
438	4S.01	General Design and Operation of Flashing Beacons			X	It appears that FHWA's intent is to ban older-style school speed limit signs where the indications are within the white portion of the sign, but the NPA as written could be misinterpreted as banning LEDs embedded within the border of the sign as per Section 2A.11. NPA language should be clarified to ensure that LED-rimmed signs are still allowed for conspicuity enhancement as per 2A.11.

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444	4T.03	Design of Lane Use Control Signals			X	VDOT disagrees with Official Ruling 4(09)-70(I) regarding the design of Lane Use Control Signals, and recommends that diagonal yellow arrow indications be allowed in addition to or instead of the yellow "X" indication. As noted in the study "Effectiveness of Using Diagonal Yellow Arrows on Lane Use Control Signals" (Dutta, Venkatanarayama, and Fontaine, Transportation Research Record, 2017) the downward diagonal yellow arrow is more effective and more understandable than the yellow "X" based on the VDOT experimentations on I-66, I-95, and I-264.
448	Part 5	Automated Vehicles Part	X			Automated vehicles are increasing on our roadways and interact with our traffic control devices in a different manner to human drivers. The inclusion of a chapter of the MUTCD solely dedicated to these vehicles is a good decision, particularly as DOTs begin the push to prepare for these vehicles in the mixed fleet scenario.
449	5A.01	Purpose and Scope		X		Item B, "repairing or replacing in a timely manner", this language is too subjective and should not be included.
450	5A.02	Overview of Connected and Automated Vehicles		X		As AVs develop further new sensors may be added to the vehicles. The list in 5A.02A-E should be open-ended (including, or not limited to type language) as the MUTCD will not be updated as quickly as technology will develop.
451	5A.03	Definition of Terms		X		For Section 5A.03, D-G, the acronyms should be spelled out. It is difficult to find the first instance (included in previous definitions) and as more terms are added, the section is likely to become more confusing.
453	5B	Provisions for Traffic Control Devices		X		VDOT recognizes the importance of maintaining and operating transportation infrastructure that is consistent with the evolving technology of automated vehicles. For this reason, we recommend that the automated vehicles be considered a "target road user" so that the material in proposed Chapter 5B be integrated into the relevant Parts, Chapters, and Sections of the MUTCD where they are more likely to be utilized by practitioners designing, installing, and maintaining highway signs, markings, and signals for all road users.
455	5B.02	Markings			X	VDOT has offered detailed comments in opposition to proposed Section 3A.04 and 3B.25 regarding line widths and chevron markings respectively. In addition to those comments, we oppose Section 5B.02 in its entirety because this section is duplicative, and even partially conflicting with, the language in Part 3. Additionally, (a) further research is required on safety benefits of contrast markings before recommending or mandating universal adoption, given the significant cost impacts of contrast markings, and (b) properly used decorative crosswalk art enhances downtown streetscapes with little adverse affects to human vision drivers.
458	5B.05	Railroad crossings		X		Some signs and markings associated with RR crossings, such as low-ground-clearance and skewed-crossing warning signs, need to remain in place, as those conditions are still present until the tracks are physically removed. Moreover this language partially conflicts with proposed Part 8 language.
459	5B.06	Traffic Control For Bicycle Facilities			X	VDOT opposes the guidance to physically separate bike facilities from other traffic using physical barriers where practicable, as the cost of physical separation is orders of magnitude higher than non-physical separation (particularly if this means concrete barriers or a 5ft unpaved separation) and it is beyond the scope of the MUTCD to recommend a planning-level decision like whether or not to separate the bike lane. Also, unclear whether tubular markers count as "physical barriers". Autonomous vehicles should not be allowed on the road if they cannot adequately detect bicyclists; note also that in many jurisdictions the presence of bike facilities does not obligate bicyclists to avoid the motorist lanes.
461	Part 6	Temporary Traffic Control	X			We support the new format, as it makes this section easier to follow and understand.
465	6A.02	Fundamental Principles of TTC		X		Agree – like the new format and relocation of the Fundamental Principles of TTC to Chapter 6A. However, in 6A.02, A and B references that TTCD's should provide information in usable formats for pedestrians with visual disabilities while in the Typical Application (TA) application figures make it a Standard (shall) condition (see 6P.28 and 6P.29). This would override the option of having project personnel assist pedestrians through the work zone, as allowed in Section 6C.02.
471	6C.02	Pedestrian Considerations			X	We would like to retain the ability to use project personnel to direct pedestrians while work operations are in progress in place of the use of audible TTC devices or establishing pedestrian detours; the use of project personnel would allow pedestrians to stay on their direct route, would in some circumstances provide better functional accessibility to those with vision or mobility impairment, and reduce the cost and complexity associated with audible information devices.
471	6C.02	Pedestrian Considerations			X	On line 42 on page 533 recommend deleting the word "concrete" describing barriers since steel and plastic water-filled are also types of acceptable barriers which could be used.
476	6D.05	Flagger Procedures	X			Strongly support the additional language prohibiting the use of hand signals alone in flagging operations in Section 6D.05, lines 11-14.

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516s	Figure 6P-28	Sidewalk Detour or Diversion		X		VDOT agrees with the need for additional changes to this section due to US DOJ ADA requirements. However, requiring the use of audible devices as Standard statements in Notes 5 and 6 instead of Guidance statements conflicts with previous information on this subject in Section 6A.02 where they are shown as Guidance statements. The information in Section 6C.02 allows the use of project personnel to assist and direct pedestrians while work is in progress, and requiring the use of audible devices as a Shall condition eliminates that option of using project personnel. Also, requiring the use of audible TTC devices anytime a sidewalk is closed, regardless of the duration of the operation, will add significant project cost increases. VDOT has had AID units stolen in urban areas, and have received nuisance complaints from businesses in high pedestrian locations. VDOT would like for FHWA to develop more guidance and best practices for implementing audible TTC devices before making this into a Standard, or keep them as Guidance statements. Additionally, Table 6P-2 appears to be missing from the NPA.
516t	Figure 6P-29	Crosswalk Closures and Pedestrian Detours		X		Please see our comments on NPA Item 516s as those comments also apply to this NPA item
524	7B.05	School Bus Stop When Flashing Signs			X	The proposed "STOP FOR SCHOOL BUS WHEN RED LIGHTS FLASH" sign is a "rules of the road" sign that should not be encouraged by the MUTCD, even as an option. To our knowledge, drivers must stop for red lights on buses in all 50 states. Also, there is a stop sign that extends from the bus in most if not all states, and therefore, the drivers who go past stopped school buses are doing so out of deliberate disrespect for the law. This proposed sign is also contrary to the proposed Section 2A.01 language discouraging "rules of the road" signs.
530	8A.03	Use of Standard Devices, Systems, and Practices at Grade Crossings		X		Diagnostic Teams can be unwieldy as it requires equal participation of two parties, and could raise conflict if one party is not cooperative or timely in their response. Agree that the Diagnostic Team is required for complicated situations (i.e. anything involving interconnection with a traffic signal) but there should be flexibility for road agencies to implement engineering judgment or engineering standards without DT involvement for less complicated situations that only involve devices maintained by the road agency. For example all decisions involving advance warning signs or RXR markings are solely at the province of the road agency. The DT requirement could also hinder relatively simple roadway improvement projects like sidewalk addition near the vicinity of a RR Xing.
539	8A.14	Temporary Traffic Control Zones		X		VDOT has had difficulty mandating edge lines thru railroad crossings because of confusion about railroad flagging requirements.
547	8B.16	High-Profile Grade Crossings		X		As worded, the Guidance statements appear to recommend positive guidance to the nearest non-humped RR crossing. This could get very complex on rail corridors with multiple adjacent humped crossings and long detours. Recommend making this an Option or deleting altogether. Signing for high-profile grade crossings should be similar to signing for weight-restricted or height-restricted bridges - advance signage should or shall be provided at the nearest upstream turnaround point, but not necessary to provide signage for the full detour route.
556	8C.05	Edge Line Pavement Markings			X	In proposed Section 8C.05, we disagree with the Guidance paragraph that suggests edge lines and lane lines extend up to and across the tracks. We recognize that this is desirable from a safety perspective. However, utilizing pavement marking equipment in close proximity to the rails has been problematic with logistical barriers to implementation that must be addressed, and therefore we recommend guidance (not standard) recommending that markings to extend to within 1 foot of the the pavement markings extend no closer than 1-foot from the rail." Specifically, these logistical barriers include a concern that railroad companies will not allow marking material to be applied to the rails themselves as they have very strict tolerances for the smoothness of the rails, and paint trucks will not be able to apply markings across "humped" crossings without running the risk of snagging and damaging nozzles. An additional complication is there is sometimes inconsistent or unclear guidance from railroad companies as to whether they will require railroad flagging even for a simple restriping operation as a mobile activitity through their crossing.
565	8D.10	Highway Traffic Signals at or Near Grade Crossings		X		After the proposed guidance statement on the automatic gates, there is another proposed guidance statement which states that "...and the timing of highway traffic signals interconnected and/or coordinated with the flashing-light signals at least once per year." VDOT recommends changing this last part to an Option statement, as annual inspection with the railroad company or transit agency at all applicable locations will be a significant cost and manpower burden, and can be difficult to coordinate.
595	9B.14	Bicycles May Use Full Lane		X		The proposed NPA text and figures do not match the description. The proposed Section 9B.14 still references the "Bicycles May Use Full Lane" sign R4-11. The sign design in proposed Figure 9B-1 for the R9-20 seems to be the exact same as the R4-11 "Bicycles May Use Full Lane" sign design as well. We suspect this is an error and support the use of "Bicycles Allowed Use of Full Lane" as proposed in the Federal Register
596	9B.15	Bicycle Passing Clearance Sign		X		Reference should be made to proposed 2A language recommending against use of permanent static "rules of the road" signs. At this point most states have similar laws, and there is no evidence that these signs make any meaningful change in driver behavior. Other methods of educational outreach would be more effective in encouraging drivers to properly pass bicyclists.

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614	9D.04	Numbered Bikeway Systems		X		On the proposed standard that states "All numbered bicycle routes shall be identified by route signs and auxiliary plaques": Recommend that auxiliary plaques be Guidance and not a Standard. Installing auxiliary plaques on every single assembly seems excessive, and seems to be an unnecessary maintenance burden on transportation agencies.
614	Figure 9D-4	Numbered Bikeway Systems		X		On Figure 9D-4: For non-numbered interstate bicycle route on drawing D and E, there is a statement in the figure that states "No standard sign; but states are to coordinate to have common design." We recommend that a reference to sign design section (9D.06) be added so that agencies can use and follow the reference to develop the "common design".
616	9D.06	Non-Numbered Bicycle Route Sign		X		Current definition of "Pictograph" in proposed Section 1C.01 does not seem to encompass bike route pictographs. Also, VDOT recommends adding guidance on designing pictographs to be used on non-numbered bike routes.
623	9E.01	Bicycle Lanes			X	VDOT disagrees with deleting the helmeted cyclist symbol from Figure 9E-1. FHWA provided no explanation for this change in the NPA. VDOT has been using the helmeted cyclist for 15 years or so and we likely have thousands of them out there. Also prefer the helmeted cyclist for bike lanes because it is less likely to get confused with the sharrow symbol (which uses the unoccupied bicycle symbol). If FHWA is interested in eliminating one of the three existing bike lane options, recommend eliminating "Bike Lane" word messages, as the symbols will always be more intuitive to the driver than a word message (not to mention less expensive to install and maintain).
631	9E.09	Shared Lane Markings			X	250 ft maximum spacing between Shared Lane Markings is excessive. If these are spaced at 1000 feet, then a casual bicyclist going at 12 mph will pass by these symbols about once per minute, and in a city grid street environment both drivers and cyclists would pass these symbols about once every other block. That seems sufficient. These symbols cost aprox. $350 apiece (when installed by contractors using preformed thermoplastic) so this change results in an additional cost of approximately $5500 per lane-mile.
647	Appendix A(1)	Clearview Lettering			X	VDOT has substantial concerns with the proposed Clearview requirements - see Section 2E.15 for detailed comments. Clearview policy should be housed in 2A or 2A, with Appendix A(1) limited to citing the text of the federal law on Clearview. Since in the current MUTCD the Appendix has minimal relevance to day-to-day MUTCD usage, most MUTCD practitioners are currently conditioned to ignore this section of the Manual as having little relevant guidance for day-to-day MUTCD usage.