



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

400 Seventh St., S.W.
Washington, D.C. 20590

October 6, 2004

Refer to: HOTO-

Mr. Richard J. Simonetta
Chief Executive Officer
Valley Metro Rail
411 North Central Avenue, Suite 200
Phoenix, AZ 85004

Dear Mr. Simonetta:

Thank you for your May 28 letter to Ms. Shelley J. Row, former Director of the Office of Transportation Operations, requesting an official interpretation of the Manual on Uniform Traffic Control Devices (MUTCD) regarding the use of Crossbuck Signs at highway - light rail transit (LRT) grade crossings. We want to apologize for the delay in replying to your letter.

You have asked specifically whether the Crossbuck sign must apply to (1) interfaces where the LRT trackway is an integral element of an urban street intersection; (2) lanes that are parallel to and directly abut a trackway and are reserved for turning movements; or (3) private or common-use driveways.

In response to your questions 1 and 2, we have the following comments. The MUTCD Section 10C.02 indicates that a Crossbuck sign may be used on a highway approach to a highway/LRT crossing on a mixed-use alignment where light rail transit operates in mixed traffic. When a LRT trackway is geometrically and operationally integrated into a signalized intersection, as those intersections described in your letter, the highway-LRT grade crossing is a mixed-use crossing. At such intersections, the LRT vehicles are controlled by the same traffic signal system as used for roadway traffic. Therefore, it is optional to use the Crossbuck sign on the approaches, including parallel turn lanes, at such intersections.

In response to question 3, we refer you to the MUTCD Section 1A.07. The MUTCD does not apply to private roads and driveways unless States have adopted legislation to require traffic control devices on their private roads open to the public to be in conformance with the MUTCD. Therefore, the installation of the Crossbuck sign on a private driveway is optional and determined at the State and local level.



We appreciate the opportunity to provide the clarification. We have assigned the following official ruling number and title to the request: "10-61(I) Crossbuck at LRT Grade Crossings - AZ." Please refer to this number in future correspondence. If you need further assistance, please contact Ms. Guan Xu at 202-366-5892.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Regina S. McElroy". The signature is fluid and cursive, with the first name "Regina" being the most prominent.

Regina S. McElroy
Director, Office of Transportation
Operations

cc: Mr. Roger Wentz, ATSSA



May 28, 2004

MS02049

Shelly Row, Director
Office of Transportation Operations
Federal Highway Administration
400 7th Street SW
HOTO Room 3401
Washington, DC 20590

**RE: CENTRAL PHOENIX/EAST VALLEY LIGHT RAIL TRANSIT PROJECT
REQUEST FROM VALLEY METRO RAIL FOR INTERPRETATION OF MUTCD**

Dear Ms. Row:

In the course of finalizing the design work for Valley Metro Rail's Light Rail Transit (LRT) System, we are revisiting those designs that may be affected since the issuance of the 2003 Edition Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways. LRT designs were previously correlated with those elements of the 2000 Edition (MUTCD). We have identified material in the 2003 edition that might have a significant impact on these substantially completed designs.

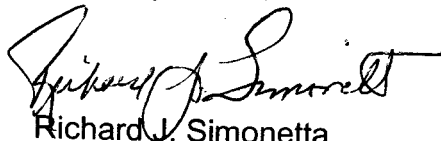
Section 10C.02 includes a Standard that states: *As a minimum, one crossbuck sign shall be used on each highway approach to every highway-light rail transit grade crossing on semi-exclusive alignment, alone or in combination with other traffic control devices.* Questions have been raised regarding whether this was intended to apply to (1) lanes that are parallel to and directly abut a trackway and are reserved for turning movements; (2) private or common-use driveways; (3) interfaces where the trackway is an integral element of an urban street intersection.

Specifically, we are requesting an interpretation of the standard relative to installation of crossbuck signs as it pertains to the three cases outlined below. Based on our engineering analysis, traffic signal control would appear to be the most appropriate device for lanes that are parallel to trackway reserved for turning movements and interfaces where the trackway is an integral element of an urban street intersection. Also based on our engineering analysis, driveways that are for property access are not within the scope of those intended for crossbuck sign posting.

Brief descriptions of typical railway-roadway interfaces in each of these categories that will be constructed as part of the LRT project in the greater Phoenix area are provided in Attachments A, B and C. These attachments further outline our request seeking your interpretation and explain the concerns that have been expressed with regard to applying the Crossbuck sign requirements to these interfaces.

As we are quickly progressing towards completion of our final design phase with construction set to begin later this year, your timely response would be most appreciated.

Sincerely,



Richard J. Simonetta
Chief Executive Officer

Attachments

cc: Document Control File, Wulf Grote, Rick Brown, Jim Starz, Rob Ball

ATTACHMENT A

With the exception of about one mile of route in the western part of the City of Tempe, all of the LRT track guideway on the Valley Metro Rail system will be installed within street right-of-ways. There are 142 intersections at which the rail cars will interface with traffic. At each of these intersections, conflicts between light rail car movements and vehicular and pedestrian traffic will be fully controlled by signals designed in accordance with the MUTCD. This includes vehicle movements approaching on the cross street as well as those turning from the parallel street.

On most two-way streets, the LRT guideway will be located in the middle of the roadway. At intersections, it will be straddled by a pair of parallel exclusive left-turn lanes. Each of these turn lanes will directly abut the LRT guideway on the left and a through-vehicle lane on the right. On one-way streets, the LRT guideway will be immediately adjacent to a turn lane on one side. On the other side it will abut either a parallel service road or a sidewalk.

In all of these cases there will be no intervening islands on either side of the turn lanes. This geometry makes the most efficient use of the right-of-way and keeps the amount of private property that has to be taken at a minimum. There is no space available within this concise configuration for the placement of any signing along either side of the turn lanes. This precludes the installation of a crossbuck at the point where turning vehicles will enter the LRT guideway.

Beyond the matter of these physical constraints, it is questionable if it was the intention of the recent addition to MUTCD to require the use of Crossbuck signs on parallel roadways. The new Section 10C.02 contains a Guidance that states: *Crossbuck signs...should be located with respect to the nearest track in accordance with Figure 8D-2.* This figure depicts only single-roadway interfaces, none of which are parallel to the trackway. (It should be noted that the crossings in this figure are shown as being controlled by flashing-light signals and automatic gates, and to correlate this with crossbuck signs, it is necessary to consult Figure 8D-1.) The absence of examples of any interfaces that include a parallel roadway might be construed to indicate that such roadways are not intended to be posted with Crossbuck signs.

In conclusion, the engineering evaluation suggests that traffic signal control is the most appropriate device for parallel turn lanes. We request an interpretation of the crossbuck requirement as it applies to parallel turn lanes.

ATTACHMENT B

There are two locations in downtown Phoenix where vehicles emerging from an existing driveway will cross the LRT guideway in order to enter the street system. Arizona state law requires such vehicles to stop and yield to any traffic on the public highway, and currently there are no active control devices at these interfaces. As part of the LRT project, blank-out warning signing will be installed as a supplement to the statutory control. When activated by a detected rail car, the signs will display a symbolic and verbal message advising motorists of its approach.

These signs will be positioned on the sidewalk near the curb line just outside the dynamic envelope of the rail cars. At that location they will be at about half of the minimum distance from the track center line specified in MUTCD Figure 8D-2 for crossbuck signs. If crossbuck signs facing emerging vehicles were to be installed at the prescribed distance from the LRT guideway track, they would be approximately in the middle of the sidewalk.

Beyond the question of the desirability of installing these large devices at that location is that of whether it is the intention of the MUTCD to mandate their use on driveways. Section 10C.02 requires that...*one crossbuck sign shall be used on each highway approach to every highway-light rail transit grade crossing...* Section 1A.13 defines "Highway" as *a general term for denoting a public way for purposes of travel by vehicular travel [sic], including the entire area within the right-of-way.* The function of each of the subject driveways is that of property access, not travel. It might be interpreted that these facilities are not within the scope of those intended for crossbuck sign posting.

In conclusion, based on our engineering analysis, driveways are that for property access are not within the scope of those intended for crossbuck sign posting. We request your review and comment on that interpretation.

ATTACHMENT C

Of the 149 locations on the initial section of the Valley Metro Rail system where the LRT guideway track(s) will cross a roadway, there are only seven with a configuration that fits one of the examples in Figure 8D-2. At these locations, which are on Camelback Road, Central Avenue and Washington Street in Phoenix and on Washington Street, 1st Street, Ash Avenue and University Drive in Tempe, the tracks cross only a single highway. In three cases it is a two-way street. In the other four cases, the intercepted roadway is functionally one-way, being one side of a divided highway.

The present designs for these seven interfaces, which were developed when the 2000 edition of the MUTCD was current, include the installation of crossbuck signs. Since there is nothing in the 2003 edition that would require revision of those designs, there is no issue regarding those seven crossings.

At all of the other 142 interfaces with roadways, the LRT guideway is an integral element of an intersection of two or more streets. Vehicular and pedestrian traffic at these intersections will be controlled by standard traffic signals, and light rail vehicle movements will be governed by light rail transit signal indications designed in accordance with Section 10D.07. Unlike traditional railroad crossings, where trains have absolute right of way and traverse the roadway without stopping, the light rail vehicles passing through these intersections will proceed only when the light rail transit signal permits them to proceed. When required by circumstances the light rail vehicles will stop. From a traffic control perspective the light rail vehicles, whether running individually or in multiple, will function as streetcars and not like freight or commuter rail trains.

ATTACHMENT C
(Continued)

A Highway-Light Rail Transit Grade Crossing can be constructed between intersections or within an intersection. At an intersection, motorists are routinely prepared to stop for conflicting movements when required to do so by traffic signals or STOP signs. At a non-intersection location, that expectation is considerably lower. Consequently, it is reasonable that more emphatic traffic control should be used. It is generally accepted that the crossbuck sign is one device that is used to provide such emphasis.

Section 10C.02 indicates that the installation of crossbuck signs at crossings is optional where general vehicle traffic and light rail vehicles are permitted to travel in the same lanes. This mixed-use, by its nature, can only occur at a street intersection. At an interface of this type, it is reasonable to rely on traditional traffic signals to regulate vehicle movements. Motorists and light rail vehicle operators are aware of the possibility that the signals could change and are prepared to stop for conflicting movements.

Semi-exclusive alignments can occur either at or between intersections. Where the latter condition exists, motorist expectation of a possible need to stop is reduced. At these locations it is reasonable to require other types of control devices in addition to, or in lieu of, traffic signals. The crossbuck sign is one such device. This is not seen as an issue for non-intersection crossings. Current design of the Valley Metro Rail system includes crossbucks at all crossings of this type.

What is seen as an issue is the use of the condition of a semi-exclusive versus a mixed-use track alignment as the discriminator for determining mandatory or optional crossbuck installation at an intersection. This factor does not affect motorist behavior, whereas the factor of intersection versus non-intersection crossing configuration does.

In conclusion, the engineering evaluation suggests that traffic signal control is the most appropriate device for intersection crossings. We request an interpretation of the intent of the recent MUTCD revision regarding crossbucks where a crossing is within a street intersection. Perhaps the reference to semi-exclusive alignment in Section 10C.02 was intended to make the latter factor the discriminator.