

Hello members of the Urban Design Committee and the Planning Commission,

I have a number of comments to make on UDC 2020-11, the Route 1 intersection changes, concerning buses, bus lanes, turn lanes, crosswalks and a general comment on these kinds of projects. I hope these comments are helpful in making this project safer.

1. **Nowhere in the Maintenance of Traffic section, nor the entire document, does it mention GRTC buses**, only school buses and the moving of a GRTC bus stop. 16 buses per hour go through this intersection between 5 am and 7 pm Monday-Saturday, half on Route 1 and the other half turning between Route 1 and Harwood. That's a bus every three minutes and 45 seconds, on a route (the 3A/B/C) tied for the second most frequent route in the city. I can't say if GRTC was consulted for how this might affect their operations, but regardless this should have been noted in the MOT. The applicant cannot say they have done an adequate MOT without the results of a consultation with GRTC on this major bus intersection, and **if they have not completed an MOT review with GRTC by the time of the meeting, the UDC and the CPC should continue this item until this has been satisfied.**
2. **The channelized left turn lane from southbound Route 1 onto Harwood is dangerous.** Look at pg 77 of the Location Plans and note that someone crossing Route 1 on the north side of the intersection from east to west will involve first crossing 3 northbound lanes and then one southbound left turn lane before reaching the median. This violates the common traffic

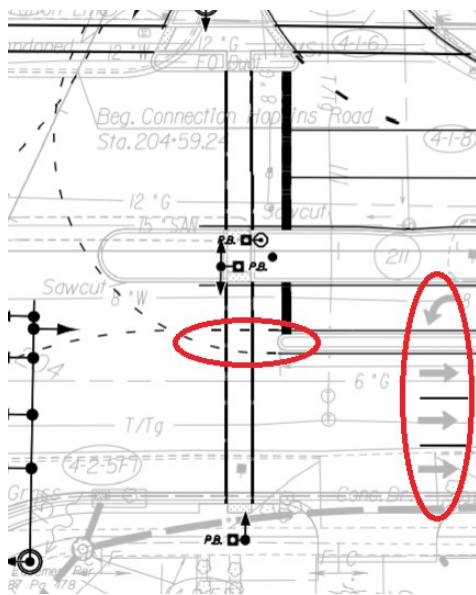


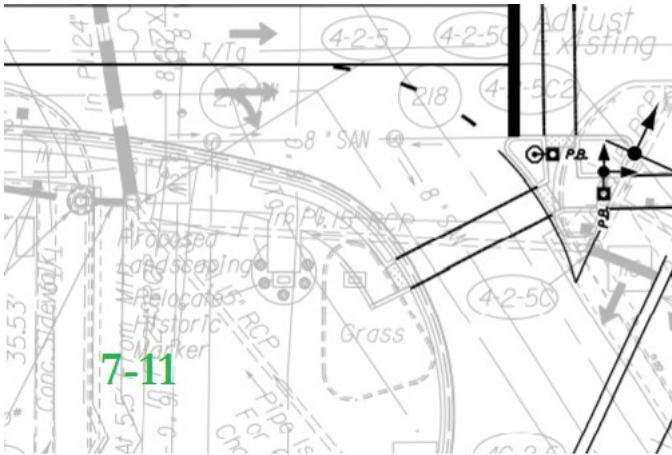
Figure 1: Using the crosswalk requires crossing two directions of traffic with no separating median, a violation of good design principles

principle, as articulated by Georgia DOT:

“Medians convert a two-way movement into two one-way movement. Improvement is safer for pedestrians. ‘Look left and cross, then ...look right and cross.’”<sup>1</sup> In this section there are actually two medians, one on each side of the left turn lane, but only one of them extends to the crosswalk. That the crosswalk will only be active when the left turn signal is red should be of no matter, as given the expected long light cycle time frustrated people walking will likely cross on red when there is no traffic coming from one direction, and if they miss noticing that this half crossing actually requires them to look in two opposing directions they are more likely to be hit. **Either the second, smaller median should be extended to include the crosswalk, or the left turn lane should be redesigned to be on the west side of the larger median.**

1 <http://www.dot.ga.gov/DriveSmart/SafetyOperation/Pages/Medians.aspx#tab-4>

3. **The addition of right-turn slip lanes will speed traffic through these intersections, harming the safety of people walking and driving that the project is ostensibly aimed to do.** Again

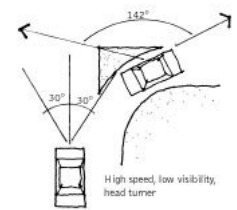


*Figure 2: The gentle curve in the right turn slip lane is designed for high speeds, even though this leads into a residential neighborhood with high rates of walking*

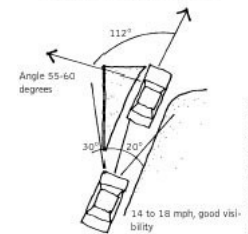
skew of the new intersection, that **without a slip lane cars would have to slow to a crawl to make the turn. And indeed, that is the point!** It is good that cars would have to slow. There are many skewed intersections in Richmond without a slip lane that see significant traffic, such as Lombardy and Brook, or Westwood and Arthur Ashe, but there are also many sharper skewed turns on Harwood itself today, such as onto Bowen/21st, Mason, Keswick and Joslin! If a vehicle can make those turns, it can make this one too. Further, trucks are prohibited on Harwood, and trucks over 7500 lbs are prohibited on Keswick, which will have access from Route 1 closed anyway, so there should be no trucks making this right turn onto Harwood at all. However, the 3C GRTC bus does make a right turn onto Harwood evenings and Sundays. It would be better to reroute this bus northbound from Route 1 to Mimosa and then Lynnhaven or Overlook; while a few stops would be missed on Route 1, these mostly service industrial locations that are unlikely to need service during the few hours the 3C runs. **The slip lanes should be removed, particularly turning onto Harwood, and if necessary the GRTC 3C should be rerouted, but if even with that reroute the lanes absolutely need to stay (they don't!), they should be redesigned with sharper angles to slow traffic as in the FHWA document<sup>3</sup> and this design guideline.<sup>4</sup> The safety of people walking should not be compromised for the slight convenience of people driving.**

see pg 77. Cars are going to speed through this intersection, directly adjacent to a 7/11 that is frequented by many lower income people in the neighborhood, which includes one of Richmond's public housing communities. To quote the Federal Highway Administration: "The problem for pedestrians is that many slip lanes are designed for unimpeded vehicular movement. Islands for the right-turn slip lanes should be designed instead to discourage high-speed turns[.]"<sup>2</sup> I expect the applicant will say that the right turn is too tight due to the

**Current AASHTO Standard**



**Recommended Design**



Sketches by Michael K. Imbrogno

*Figure 3: In the recommended design the driver looks to the left, just past 90 degrees, while in the disfavored AASHTO standard the driver has to look far over their shoulder*

<sup>2</sup> <https://safety.fhwa.dot.gov/saferjourney1/Library/countermeasures/15.htm>

<sup>3</sup> Ibid.

<sup>4</sup> [http://pedbikesafe.org/PEDSAFE/countermeasures\\_detail.cfm?CM\\_NUM=24](http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=24)

4. **The crosswalks should be painted with continental or ladder-style crossings, not transverse parallel lines as shown.** These crossings enhance pedestrian visibility, as per an FHWA study.<sup>5</sup> Especially given the lower level of car ownership in this low-income neighborhood, the need to cross Route 1 to access southbound bus stops, and a pedestrian injury occurring at this intersection in 2019, safe crossings for pedestrians are incredibly important, and a stated rationale for this project.
5. **The general design of this project seems to reinforce the roadway's purpose as a place for people driving to speed.** Cars routinely surpass the 35 mph speed limit and this wide stretch of roadway is unlikely to change that. Removing in cross-street access at Fairfax and Halifax, requiring right-in, right-out turning movements, further channelizes traffic, increasing the speed at which people feel safe. If I had to guess as to why this intersection has so many crashes (including 11 injuries in 2019 alone)<sup>6</sup>, I'd suspect it's not the offset roadways as the main factor but that cars are moving so fast that people misjudge things and end up making a turn that results in a crash. Mike Spack, a Professional Traffic Operations Engineer, says the planning level D/E LOS for **a 2 lane road (one in each direction) plus left turn lanes is 18,300 vehicles per day.**<sup>7</sup> Given that **traffic volumes per day on Route 1 are 13,000 south of Harwood and 18,000 to the north**, three through lanes in each direction is far too much for the amount of traffic shown. **If this intersections is going to be rebuilt, it (and the entire Route 1 corridor) should have no more than one through lane, one through/right lane and one left turn lane.** If this results in lots of empty leftover space (because, according to the city's Urban Design Guidelines, "An 11 foot travel lane should only be utilized along corridors designed for speeds in excess of 40 mph,"<sup>8</sup> and it is 35 mph here, already too high), **the curbside lane should be repurposed by the city into a bus lane**, or as part of the Ashland to Petersburg Trail.
6. **It seems this project, at \$11.6 million, is another inefficient use of government dollars.** I understand that most of this money comes from the state and federal governments, so it won't cost the city much, and were it to be refused it would just go to some other overbuilt roadway project, likely outside the city. And there are some genuinely good improvements in here, though more is needed; the high number of injuries at this intersection needs to be reduced. But I suspect that while there will be some reductions, this high speed corridor is going to continue to be dangerous to all roadway users, just marginally less so. The city, region and state need to rethink how we decide which projects get funding and how they are designed.

Since this project will be approved, I hope design changes are made to reflect these concerns: keeping GRTC running in the MOT, fixing the channelized left turn lane/median, removing the slip lanes or altering their angle to slow the turns and painting ladder-style crosswalks. This would improve the project, making it safer for everyone at the small cost of slightly increased time in a few situations.

Sincerely,

Nicholas Smith

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5 <https://www.fhwa.dot.gov/publications/research/safety/pedbike/10067/index.cfm>

6 <https://www.treds.virginia.gov/Mapping/Map/CrashesByJurisdiction>

7 <http://www.mikeontraffic.com/numbers-every-traffic-engineer-should-know/>

8 [http://www.richmondgov.com/CommitteeUrbanDesign/documents/UDC\\_Guidelines.pdf](http://www.richmondgov.com/CommitteeUrbanDesign/documents/UDC_Guidelines.pdf)