

# **APPENDIX A**

## **Literature Review**

## **Appendix A - Literature Review**

As an initial step in this study, a search was conducted to obtain existing literature and previously completed or ongoing studies, reports or data collection efforts which examined the effect of asphalt art projects on safety performance metrics, such as crash rates or road user behavior. This research included an online search, review of the Transportation Research Board (TRB) database and email/phone interviews with transportation officials from over three dozen city inquiring about their experience with asphalt art projects.

### **1.1. National Guidance and Official Rulings**

The FHWA has historically advised against most types of aesthetic treatments and any art within the roadway. The MUTCD, does not discuss asphalt art or similar aesthetic treatments at length; however, does include a guidance statement in Chapter 3G on Colored Pavements: “Colored pavement located between crosswalk lines should not use colors or patterns that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application.”

The FHWA has also issued several Official Rulings on crosswalk art or aesthetic treatments within crosswalks in 2001, 2011 and 2013 which concluded that crosswalk enhancements of this type had no discernible effect on pedestrian safety or crash reduction. Additionally, the FHWA has stated similar positions on aesthetic treatments within medians and islands. The 2011 official ruling stated that “use of crosswalk art is actually contrary to the goal of increased safety and most likely could be a contributing factor to a false sense of security for both motorists and pedestrians.” According to these rulings, “the FHWA’s position has always been, and continues to be, that subdued-colored aesthetic treatments between legally marked transverse crosswalk lines are permissible provided that they are devoid of retroreflective properties and do not diminish the effectiveness of legally required white transverse markings used to establish the crosswalk. Examples of acceptable treatments include brick lattice patterns, paving bricks, paving stones, setts, cobbles, or other resources designed to simulate such paving. Acceptable colors for these materials would be red, rust, brown, burgundy, clay, tan, or similar earth tone equivalents. All elements of pattern and color for these treatments are to be uniform, consistent, repetitive, and expected so as to not be a source of distraction. No element of the aesthetic interior element is to be random or unsystematic. No element of the aesthetic interior treatment can implement pictographs, symbols, multiple color arrangements, etc., or can otherwise attempt to communicate with the roadway user.” Several FHWA official rulings, along with Chapter 3G of the MUTCD 10<sup>th</sup> Edition are attached in Exhibit I.

### **1.2. Upcoming Revision to the MUTCD**

The FHWA is currently in the process of revising the MUTCD for the upcoming 11<sup>th</sup> edition and has undergone an extensive public comment period on content revisions. As the new version of the MUTCD will focus on more people-friendly designs within the current administration, asphalt art and other colored pavement treatments are topics of discussion. Updated language regarding color crosswalks was proposed jointly by the Institute of Transportation Engineers (ITE) and the National Association of City Transportation Officials (NACTO) in a joint letter to the MUTCD dated 11/5/2021.

This letter is attached as Exhibit II. The FHWA is currently addressing and resolving public comment and next steps on the current draft are being determined.

### **1.3. Interviews with City Transportation Officials**

Email/phone interviews were conducted with transportation officials from over selected cities inquiring about their experience with asphalt art projects related to safety. Apart from internal studies generated by municipal staff, no all-encompassing study exists yet that creates a standardized set of metrics by which to compare safety across different art improvement types, facility types, settings, and geographic regions, and considers the long-term effects of asphalt art on roadway safety. This section summarizes key points discussed with three municipalities regarding recently completed or ongoing studies on asphalt art projects within their jurisdiction. Supplemental Data and correspondence with each of the below municipalities is attached in Exhibit III.

#### *Boulder, Colorado*

Project Location: 34th Street and Valmont Road, Boulder, CO

Source: Veronica Son, Transportation Engineer

Metric Utilized: Travel Speed

Summary from municipality: “Overall, we have not seen much of an impact on travel speeds due to the mural paintings on 34th Street north of Valmont Road. Below [is a comparison of] the before and after data collections for our mural. We will let you know if we end up collecting data for the Avocado/19th street mural.

- The before-analysis period occurred the week of 6/19/2019, Tuesday – Thursday
- The after-analysis period occurred the week of 11/16/2020, Tuesday – Thursday
- 95<sup>th</sup> Percentile speed increased from 29 mph to 39 mph
- 85<sup>th</sup> Percentile speed increased from 26 mph to 27 mph
- 50<sup>th</sup> Percentile speed increased from 20 mph to 22 mph
- Average speed increased from 20 mph to 22 mph
- Prevalence of speeding increased from 16% to 63%
  - Speed limit decreased 5 mph, from 25 mph to 20 mph between the before and after comparison periods.
- Average Daily Traffic increased from 773 vehicles/day to 832 vehicles/day”

Key items from interview:

- The speed limit along 34th Street changed from 25 mph in 2019 to 20 mph in 2020. This change can be seen for the % speeding statistic. The reduction in speed limit contributes to the increase in vehicles exceeding the posted speed, 23% of vehicles.
- The City used a different traffic collection device unit for 2019 and 2020 (JAMAR vs MetroCount). There are different calibration variances between the two units so a difference in 1-2 mph may be due to having used a different data collection unit.
- This data compares June 2019 to COVID November 2020. As time of year has an impact on traffic data, it should be noted that schools were not in session during the June 2019 analysis period.

### Ft. Wayne, Indiana

Source: Anna Baer, Transportation Engineering Project Coordinator

Project Location: Fairfax Ave & Gaywood Dr, Fort Wayne IN

Data Collected: Speed

Summary: “[Below] is the data for the artistic crosswalks that were installed a month ago in Fort Wayne. They were installed at a residential intersection close to an elementary school. The crosswalks on the north, east, and south sides of the intersection were painted.”

Key Items to Take into Consideration:

- Speed data indicates that the 50<sup>th</sup> percentile speed didn’t change but that the 85<sup>th</sup> percentile and 95<sup>th</sup> percentile speeds were reduced by 1 mph.
- As data was collected south of the intersection, it is only applicable for southbound vehicles.
- The crosswalks were painted three days into the new school year. The before-analysis period was collected before the school year began and the data from the after-analysis period was collected is after schools were in session.

### Tampa, Florida

Source: Kelly Fearon, Mobility Department

Project Location: Main Street and MacDill Ave, Tampa FL

Data Collected: Speed, Crashes

Summary: Historical crash and speed data was collected for a project recently implemented in October 2021. While after-period analysis data has not yet been collected. The City will continue to assess the intersection for safety performance indicators.

### Atlanta, Georgia

Source: Midtown Alliance and Urbanize Atlanta

<https://www.midtownatl.com/business/development-tour>

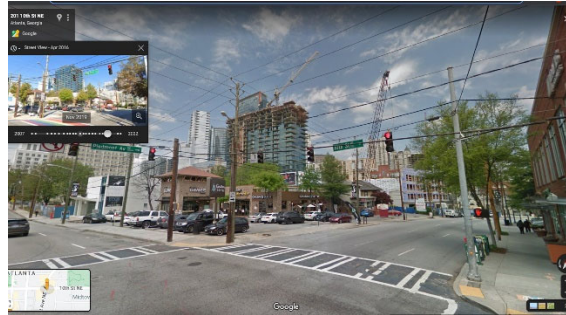
<https://urbanize.city/atlanta/post/midtown-skyline-growth-since-2010-development-boom>

Project Location: 10<sup>th</sup> Street and Piedmont Street, Atlanta, GA

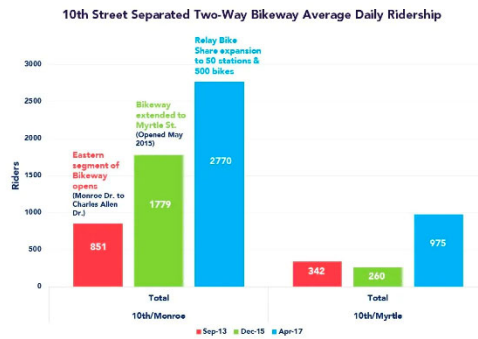
Data Collected: Volume, Crashes

Summary: The 10th St & Piedmont Street site, a signalized intersection in the rapidly growing Midtown area of Atlanta, was one of only two sites to show an increase in total collisions. However, the intersection had a 17% decrease in injury crashes and a slight 4% decrease in vulnerable user crashes, despite rapid growth in activity levels. The project was successful on the basis of this decrease in injuries alone and is even more impressive given the rapid redevelopment of immediate area surrounding the intersection, accompanied by a nearly three-fold increase in bike activity (without bike improvements at the intersection itself), an 18% increase in motor vehicle volumes on Piedmont Street, and a likely increase in pedestrian volumes to match.

- The intersection is one block west of the end of a two-way protected bike lane installed in the middle of the Before period, but there is no bike facility on 10th Street at Piedmont; bicycle riders are in the general motor vehicle lanes here. Counts indicate that bicycle volume on 10th Street near the Piedmont intersection skyrocketed from 342/day in September 2013 to 975/day in April 2017, a nearly three-fold increase that may have continued to grow until 2020.
- Motor vehicle volume on Piedmont Street increased 18% from 2013 to 2016 and may have continued to grow until 2020.
- The site is the main pedestrian route between Piedmont Park and the new developments in Midtown; large increases in pedestrian activity likely occurred as well.



**FIGURE 1 –Piedmont Street at 10th Street in 2016 showing significant construction in the period just before implementation of the asphalt art. Image: [Google Maps](#)**



**FIGURE 2 – Growth in bicycling on 10th Street two-way bikeway, which terminates at Myrtle Street, 300 feet east of Piedmont Street.**

Annual Statistics										
Data Item	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Statistics type	-	-	-	-	Estimated	Actual	Estimated	Estimated	Estimated	Actual
AADT	12000	9450	9490	9490	10200	11200	11900	11900	12000	6590
K-Factor	-	-	-	-	-	0.123	-	-	-	0.101
D-Factor	-	-	-	-	-	0.700	-	-	-	1.00
Future AADT	-	-	-	-	-	11400	15200	15000	15100	15100

**FIGURE 3 – GDOT motor vehicle volume data for Piedmont Street upstream of 10th St is summarized below. [https://gdottrafficdata.drakewell.com/sitedashboard.asp?node=GDOT\\_PORTABLES&cosit=0000121\\_5156](https://gdottrafficdata.drakewell.com/sitedashboard.asp?node=GDOT_PORTABLES&cosit=0000121_5156)**

# EXHIBIT I

## CHAPTER 3G. COLORED PAVEMENTS

### Section 3G.01 General

#### Support:

- 01 Colored pavements consist of differently colored road paving materials, such as colored asphalt or concrete, or paint or other marking materials applied to the surface of a road or island to simulate a colored pavement.
- 02 If non-retroreflective colored pavement, including bricks and other types of patterned surfaces, is used as a purely aesthetic treatment and is not intended to communicate a regulatory, warning, or guidance message to road users, the colored pavement is not considered to be a traffic control device, even if it is located between the lines of a crosswalk.

#### Standard:

- 03 **If colored pavement is used within the traveled way, on flush or raised islands, or on shoulders to regulate, warn, or guide traffic or if retroreflective colored pavement is used, the colored pavement is considered to be a traffic control device and shall be limited to the following colors and applications:**
- A. **Yellow pavement color shall be used only for flush or raised median islands separating traffic flows in opposite directions or for left-hand shoulders of roadways of divided highways or one-way streets or ramps.**
  - B. **White pavement color shall be used for flush or raised channelizing islands where traffic passes on both sides in the same general direction or for right-hand shoulders.**

- 04 **Colored pavements shall not be used as a traffic control device, unless the device is applicable at all times.**

#### *Guidance:*

- 05 *Colored pavements used as traffic control devices should be used only where they contrast significantly with adjoining paved areas.*
- 06 *Colored pavement located between crosswalk lines should not use colors or patterns that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application.*

MAY - 3 2011



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

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

In Reply Refer To:  
HOTO-1

Mr. David Woodin, P.E.  
Director of Traffic Operations  
New York State Department of Transportation  
50 Wolf Road  
Albany, NY 12232

Dear Mr. Woodin:

Thank you for your April 26 email requesting an official interpretation of the Manual on Uniform Traffic Control Devices (MUTCD) regarding a proposed use of a colored pavement treatment within crosswalks in Buffalo, New York. You provided a photo showing the proposed design of the colored pavement treatment and asked whether it is in compliance with the provisions of Section 3G.01 of the MUTCD. The proposed colored pavement treatment in Buffalo consists of yellow, white, beige, green, and gray colored "jigsaw-puzzle" pieces that are fit together within the area bounded by the white transverse lines that establish the crosswalk. The colored treatment is non-retroreflective but the locations are at urban intersections with street lighting.

It is our Official Interpretation that the proposed treatment in Buffalo would degrade the contrast of the white crosswalk lines and should not be used. This interpretation also applies to any colored pavement or colored marking materials within a crosswalk except subdued-colored paving bricks, paving stones, or materials designed to simulate such paving. The basis for this interpretation is as follows.

Paragraph 6 of Section 3G.01 of the 2009 MUTCD states the following Guidance: "Colored pavement located between crosswalk lines should not use colors or patterns that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application." The bright colors and bold pattern of the proposed Buffalo treatment, and any other such treatment that features bright colors and/or distinctive patterns, would clearly degrade the contrast between the white transverse crosswalk lines and the roadway pavement, and therefore should not be used.

Previous interpretations have deemed it acceptable to use brick pavers, granite paving stones, and similar paving treatments within a crosswalk as a part of an urban streetscaping treatment






that features sidewalks using these same pavers. In that environment, the bricks or paving stones in the crosswalks are identical to and consistent with the overall neighborhood pedestrian area paving treatment. As such, they perform a function that is purely or predominantly aesthetic. Such pavers are typically in relatively subdued colors and, from the normal viewing distance, the brick or stone pavers have the appearance of a uniform, non-patterned area that does not materially degrade the contrast of the white crosswalk lines. Treatments that mimic such subdued brick or stone pavers using paint, thermoplastic, or other marking materials have also been deemed to be acceptable in a streetscaped area's crosswalks.

It is our understanding that the Buffalo treatment is designed to be an artistic and aesthetic enhancement to the neighborhood. Even though it is non-retroreflective, its use in areas with street lighting means that it will be prominently visible to road users both day and night and it has a significant potential to distract road users and thereby reduce safety. Also, it should be noted that Section 3B.18 of the MUTCD prescribes that only the uniform use of diagonal or longitudinal white bars in the crosswalk area is allowed to perform the function of adding conspicuity to a crosswalk.

We recognize that this interpretation may be a disappointment to the proponents of the colored crosswalk treatments in Buffalo, but we trust that they will understand that traffic control device uniformity, and the safety benefits such uniformity provides, must take precedence. The city may wish to consider applying the artistic colored pavement treatment to other areas that are not within any roadway open to public travel.

Thank you for writing on this subject. We hope that our interpretation answers your question. Please note that we have assigned your request the following official interpretation number and title: "3(09)-8 (I) - Colored Pavement Treatments in Crosswalks." Please refer to this number in any future correspondence regarding this issue.

Sincerely yours,

  
for Mark R. Kehrli  
Director, Office of Transportation  
Operations

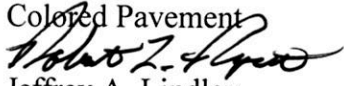


U.S. Department  
of Transportation  
**Federal Highway  
Administration**

# Memorandum

Subject: **INFORMATION:** MUTCD – Official  
Ruling 3(09)-24(I) – Application of  
Colored Pavement

Date: **AUG 15 2013**

From:   
Jeffrey A. Lindley  
Associate Administrator for Operations

In Reply Refer To:  
HOTO-1

To: Federal Lands Highway Division Engineers  
Division Administrators

**Purpose:** Through this memorandum, the Federal Highway Administration's (FHWA) Office of Transportation Operations (HOTO) is issuing an Official Interpretation of Chapter 3G of the *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD) on the approved uses of colored pavement. For recordkeeping purposes, this Official Ruling has been assigned the following number and title: "3(09)-24(I) – Application of Colored Pavement."

**Background:** The FHWA is concerned that considerable ambiguity continues regarding how colored pavement can be used, especially between the white transverse lines of a legally marked crosswalk.

Colored pavements consist of differently colored road paving materials, such as colored asphalt or concrete, or paint or other marking materials applied to the surface of a road or island to simulate a colored pavement. Colored pavement is a traffic control device when it attempts to communicate with any roadway user or when it incorporates retroreflective properties. Colored pavement can also be a purely aesthetic treatment. When used in this manner, colored pavement is not a traffic control device provided that it does not attempt to communicate with the motorist or incorporate elements of retroreflectorization.

**Colored Pavement in Crosswalks:** In the late 1990s, the marketplace introduced and promoted aesthetic treatments for urban streetscape environments that included the opportunity to install a range of colors and a multitude of patterns. The most popular opportunity to implement these treatments was between the legally marked transverse lines of crosswalks. This was typically done as part of larger efforts by cities to enhance the aesthetics of an area that could include decorative luminaires, street furniture, sidewalk art, etc. These crosswalk treatments were publicized and marketed as a method to increase conspicuity of the crosswalk that would translate into increased safety and a reduction of pedestrian deaths. In December 2001, the FHWA issued its first Official Ruling<sup>1</sup>

<sup>1</sup> MUTCD Official Ruling 3-152 (I) as Memorandum of Action, December 7, 2001

regarding the use of these aesthetic treatments, which concluded that crosswalk enhancements of this type had no such discernible effect on safety or crash reduction.

The marketplace looked to capitalize on advancements in pavement retroreflectivity in the mid-2000s, and further advocated for these aesthetic treatments on public streets as a way to increase crosswalk visibility. This included the benefits of the increased recognition of crosswalks both during the day and at night since the materials were designing retroreflective properties into the aesthetic treatments. In 2004 and in 2005, the FHWA issued two separate but related Official Rulings<sup>2,3</sup> concluding that incorporating retroreflectivity into an aesthetic crosswalk treatment renders it an official traffic control device. Further, these Official Rulings continued to discourage implementation of such treatments and also concluded that these enhancements still had no increased effect on safety or contributed to a reduction in pedestrian deaths.

The evolution of crosswalk treatments continued into the form of “crosswalk art” because it was becoming a common misconception that as long as the white transverse lines were present—thereby legally marking the crosswalk—then the agency was free to treat the interior portion of the crosswalk as it desired. In 2011, the FHWA issued an additional Official Ruling<sup>4</sup> that crosswalk art—defined as any freeform design to draw attention to the crosswalk—would degrade the contrast of the white transverse lines against the composition of the pavement beneath it. In deviating from previous Official Rulings on the matter that concluded an increased factor of safety and decreased number of pedestrian deaths were not evident after installation, this 2011 Official Ruling stated that the use of crosswalk art is actually contrary to the goal of increased safety and most likely could be a contributing factor to a false sense of security for both motorists and pedestrians.

The FHWA’s position has always been, and continues to be that subdued-colored aesthetic treatments between the legally marked transverse crosswalk lines are permissible provided that they are devoid of retroreflective properties and that they do not diminish the effectiveness of the legally required white transverse pavement markings used to establish the crosswalk. Examples of acceptable treatments include brick lattice patterns, paving bricks, paving stones, setts, cobbles, or other resources designed to simulate such paving. Acceptable colors for these materials would be red, rust, brown, burgundy, clay, tan or similar earth tone equivalents. All elements of pattern and color for these treatments are to be uniform, consistent, repetitive, and expected so as not to be a source of distraction. No element of the aesthetic interior treatment is to be random or unsystematic. No element of the aesthetic interior treatment can implement pictographs, symbols, multiple color arrangements, etc., or can otherwise attempt to communicate with any roadway user.

Patterns or colors that degrade the contrast of the white transverse pavement markings establishing the crosswalk are to be avoided. Attempts to intensify this contrast by increasing or thickening the width of the transverse pavement markings have been observed in the field. These attempts to increase contrast are perceived to be efforts to circumvent the contrast prerequisite so that an intentional noncompliant alternative of an aesthetic interior pattern or color can be used. Further techniques to install an empty buffer

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<sup>2</sup> MUTCD Official Ruling 3-169 (I) – Section 3B.19 Retroreflective Colored Pavement, September 1, 2004

<sup>3</sup> MUTCD Official Ruling 3-178 (I) – Retroreflective Colored Pavement – Additional Clarification, April 27, 2005

<sup>4</sup> MUTCD Official Ruling 3(09)–8 (I) – Colored Pavement Treatments in Crosswalks, May 3, 2011.



space between an aesthetic treatment and the interior edge of the white transverse crosswalk markings have also been observed in the field. This strategy is also perceived to be an attempt to circumvent FHWA's prior position on contrast. However, an empty buffer space between a subdued-colored, uniform-patterned aesthetic treatment can be implemented to enhance contrast between the aesthetic treatment and the white transverse pavement markings. When used properly, buffer spaces can be an effective tool to disseminate a necessary contrast in order to visually enhance an otherwise difficult to discern white transverse crosswalk marking, provided that the aesthetic treatment conforms to the conditions in the preceding paragraph.

**Colored Pavement in Medians:** Several agencies nationwide have used aesthetic colored pavement in medians that separate opposite directions of travel. These treatments are typically simulated red brick patterns or pavers. This is allowable if the median is closed to traffic. Where the center portion of the roadway functions to facilitate turns or operates as a two-way left turn lane, aesthetic treatments cannot be used in that center area in accordance with Paragraph 3 of Section 3G.01 in the MUTCD. Further, provisions elsewhere in Part 3 of the MUTCD require or recommend the turning functions of turn lanes or two-way left turn lanes to be marked with pavement word markings or arrows where applicable. The use of aesthetic colored patterns or pavers in these lanes simulates a supplemental background to standard turn markings and is an attempt to enhance conspicuity of the median thereby serving as communication with the motorist. This practice to use aesthetic treatments is disallowed since the median is open to traffic.

**Colored Pavement for Islands:** Where an island is designated as a traffic-control device, curbs, pavement edges, pavement markings, channelizing devices, or other devices are used. Islands are most commonly used to separate traffic movements or to provide pedestrian refuge. Regardless of whether the island is raised or flush with the roadway surface, islands are a potential for providing aesthetic qualities. Islands that separate movements of traffic and choose to incorporate colored pavement into interior sections or to the top surface of their design are to comply with Item A or B of Paragraph 3 of Section 3G.01. This would be applicable when the island is used to address a need to facilitate traffic that would otherwise have difficulty navigating the roadway if the island was absent.

Islands that are intentionally aesthetic in nature only are to be designed similar to those aesthetic treatments for crosswalks as described above. The most common applications of these purely aesthetic treatments are pedestrian refuge islands and textured raised buffers between a bikeway and a motorized vehicular lane.

**Colored Pavement for Bicycle Lanes:** Green colored pavement is approved for use in bicycle lanes only to enhance the conspicuity of where bicyclists are required to operate, and areas of the bicycle lane where bicyclists and other roadway traffic might have potentially conflicting weaving or crossing movements. Approval to use green colored pavement shall be in accordance with Paragraph 17 of Section 1A.10 in the 2009 MUTCD.

The FHWA issued an Interim Approval (IA-14) for the use and application of green colored pavement on April 15, 2011. The information provided in the IA-14 memorandum remains in effect.



The use of green colored pavement in a bicycle facility other than a legally marked bicycle lane is either not approved or is experimental. FHWA's Bicycle and Pedestrian Web site ([http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/guidance/design\\_guidance/mutcd\\_bike.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd_bike.cfm)) can be helpful in determining what is or is not approved and what is experimental. Agencies that desire to use bicycle facilities that are experimental are required to submit their request for approval in accordance with paragraphs 3, 4 and 8 through 10 of Section 1A.10 in the MUTCD.

The FHWA is aware that agencies might be using green colored pavement to supplement, fill in or outline parking stalls for electric vehicle charging stations in order to express the agency's commitment to environmentally friendly initiatives. Use of green colored pavement for this purpose is not allowed. Although the applicability of the MUTCD may be limited in certain settings involving parking stalls, agencies are encouraged to adhere to the MUTCD with respect to disallowing green colored pavement in parking facilities for the purpose of maintaining uniformity among similar facilities.

**Colored Pavement on Freeways and Expressways:** The FHWA is aware of agencies nationwide using colored pavement on higher speed facilities as a method to visually differentiate the shoulder or special-use lanes from the general-purpose lanes, to demarcate the exit gore area, or to differentiate a ramp terminal from the mainline facility. The FHWA maintains the position that contrasting techniques on high-speed facilities have no other intention than to communicate with the motorist, regardless of whether elements of retroreflectivity are implemented for the colored pavement.

Additionally, the 2011 edition of the American Association of State Highway and Transportation Officials' *A Policy on the Geometric Design of Highways and Streets* discusses various methods of contrasting the shoulder with the adjacent pavement traveled way. The policy states that with regard to bituminous pavements, "the use of edge lines as described in the Manual on Uniform Traffic Control Devices... reduces the need for shoulder contrast." Edge lines separating shoulders from the traveled way on Interstate routes have been required by the MUTCD since 1971, supplanting the practice of using contrasting material for shoulders when an edge line was optional. Therefore, there should be little need for such a contrast that cannot be accommodated by the allowable pavement colors prescribed by the MUTCD.

If a need to provide contrast on a high-speed facility has been determined, then that contrast can be accomplished by a number of alternatives. Asphalt mixtures can be tinted to provide a shade of grey. White colored pavement can also be implemented. Paragraph 3 of Section 3G.01 in the MUTCD allows the use of white colored pavement for exit gore areas and right-hand shoulders. In the event that the main traveled way is concrete, an asphalt top layer could be applied to the shoulder to provide contrast.

**Colored Pavement for Public Transit Systems:** The use of red colored pavement for public transit systems such as streetcar and/or bus-only lanes is currently experimental. The use of colored pavement in these settings requires approval from the FHWA's Office of Transportation Operations. Agencies that desire to experiment with colored pavement should only do so where an engineering study can determine that increased travel speeds will be expected by the public transit vehicle, reduced overall service time through the corridor will be expected by the public transit vehicle, and the implementation of the

colored pavement to a converted general purpose lane in the traveled way will not adversely affect the traffic flow in the remaining general purpose lanes.

**Blue Colored Pavement:** Blue is not a colored pavement and is not to be used as such in accordance with Paragraph 3 of Section 3G.01. Blue as it applies to a pavement marking is exclusively reserved for the background color in the international symbol of accessibility parking symbol (see Figure 3B-22) and for the supplemental pavement marking lines that define legal parking spaces reserved for use only by persons with disabilities as provided in Paragraph 5 of Section 3A.05.

Applying blue colored pavement to entire stalls or entire areas of parking reserved for persons with disabilities is to be avoided. Although the applicability of the MUTCD may be limited in certain settings involving parking stalls, agencies are encouraged to adhere to the MUTCD with respect to blue colored pavement in parking facilities for the purpose of maintaining uniformity among similar facilities.

**Purple Colored Pavement:** Purple is not approved for use as a colored pavement in any application, including toll facility environments. Purple as a pavement marking color is permitted in accordance with Paragraphs 5 and 6 of Section 3E.01 of the MUTCD.

**Chromaticity Coordinates:** The acceptable ranges of chromaticity coordinates that define the standard colors for pavement markings are found in the Appendix to Subpart F of 23 CFR 655—Alternate Method of Determining the Color of Retroreflective Sign Materials and Pavement Marking Materials.

Acceptable ranges for the chromaticity coordinates defining the color green for use as a pavement marking are provided in the IA-14 memo dated April 15, 2011.

**Conclusion:** Chapter 3G of the 2009 MUTCD contains provisions regarding the use of colored pavements. If colored pavement is used to regulate, warn, or guide traffic or otherwise attempts to communicate with the roadway user, the colored pavement constitutes a traffic control device. Agencies cannot intentionally exclude elements of retroreflectivity as part of a systematic process to classify the color pavement as a purely aesthetic treatment in order to circumvent the provisions of Chapter 3G.

Paragraph 3 of Section 3G.01 in the MUTCD limits the use of colored pavement used as a traffic control device to the colors yellow and white. Interim Approval IA-14 permits the use of green colored pavement for marked bicycle lanes. All other colors for use on highway pavement in the right-of-way are either disallowed or are experimental as described above, unless the colored pavement is a purely aesthetic treatment and makes no discernible attempt to communicate with a roadway user.

cc:

Associate Administrators  
 Chief Counsel  
 Chief Financial Officer  
 Directors of Field Services  
 Director of Technical Services

## EXHIBIT II



November 5, 2021

Stephanie Pollack  
Acting Administrator (HOA-1)  
Federal Highway Administration  
1200 New Jersey Avenue, S.E.  
Washington, DC 20590

Re: Specific Revisions Recommended to the Proposed 11th Edition of the Manual on Uniform Traffic Control Devices (MUTCD)

Dear Acting Administrator Pollack,

The Institute of Transportation Engineers (ITE) and the National Association of City Transportation Officials (NACTO) represent thousands of transportation professionals throughout the United States. Our members rely on FHWA guidance through publications like the *Manual on Uniform Traffic Control Devices (MUTCD)* to ensure that the transportation system safely serves the needs of all users. In May 2021, both organizations submitted extensive comments on the Notice of Proposed Amendment (NPA) that will ultimately form the foundation of the 11<sup>th</sup> Edition of the *MUTCD*. We continue to encourage FHWA to finalize this edition as soon as is practical, given the large number of comments submitted.

As FHWA finalizes the 11<sup>th</sup> Edition, we would like to provide some additional specific information and language on three key issues of common interest. We hope that FHWA will find this information to be a useful supplement for understanding ITE and NACTO's NPA comments, and for finalizing the text of the new *MUTCD*. The three issue areas are further described below and specific language changes to the *MUTCD* content proposed in the Clean Proposed NPA text are attached.

#### **Requests for Experimentation**

We recommend that FHWA provide a simple and straightforward path for agencies to be added to existing experiments that FHWA has already approved. Allowing agencies to be easily added to existing experiments has three key benefits:

- Easier and less costly for all agencies to participate in experiments;
- Easier for FHWA to gather data and experience necessary to evaluate the effectiveness of experimental traffic control devices and treatments; and
- Easier for FHWA to compare new devices and treatments at different locations and in various contexts.

Accelerating the collection of necessary evaluation information also has obvious benefits in accelerating broader approval to use new devices and treatments through the Interim Approval process or formal revision to the *MUTCD*. ITE, NACTO and others have proposed further specific changes to Section 1B.06 to reduce procedural restrictions and legalistic complexity, which are not covered in this letter.

#### **Decorative Treatments in Crosswalks**

Both of our organizations believe that that greater flexibility is needed in the *MUTCD* to allow decorative (or aesthetic) treatments in crosswalks. These treatments already exist in dozens of communities across the United States, and have resulted in no documented degradation of safety. However, we agree that decorative elements in crosswalks are not appropriate in all locations. We propose that a wide variety of decorative crosswalks be allowed on low-speed local roadways, as well as at signal- or beacon-controlled intersections. By providing guidelines for the context in which aesthetic treatments are allowed, FHWA can protect the value of crosswalks while avoiding



the need to prescribe or prohibit specific types of art. NACTO and ITE have both previously recommended that changes be made to the proposed Sections 3H.03 Aesthetic Treatments in Crosswalks in the *MUTCD NPA*. The attached material provides details and proposes new language.

### **Pedestrian Signal Warrants and Crosswalk Guidance**

We recommend aligning the signal warrants in the *MUTCD* with the marked crosswalk guidance. The marked crosswalk guidance has been based since 2009 on the FHWA study “Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations”, but signal warrants have not. Several related additions to the *MUTCD* are recommended:

1. Changes to clarify the section on marked crosswalks; and
2. A new option under Section 4C.05 Pedestrian Signal Warrant based on vehicle speed and volume; and
3. A similar warrant for Pedestrian Hybrid Beacons.

These changes would align the *MUTCD* with best practice guidelines, including FHWA's recent *Safe Transportation for Every Pedestrian (STEP)* resources and other FHWA studies. These studies consider number of lanes, speed, and volume of motor vehicle traffic, rather than pedestrian volume, when considering the need for a red indication at an established crosswalk.

Additionally, these changes would resolve Catch-22 situations where the need for a pedestrian crossing has been identified, and due to high speed or traffic volume a crosswalk without a signal or beacon is not recommended, but Section 4C does not clearly support installation of a signal or beacon, so the entire crossing may not be installed. Together, these changes would allow practitioners to establish the need for a crossing based on context, then determine whether any additional traffic control or geometric features are necessary to create a safe crossing.

We hope this information is useful to you and your staff as you continue the complex process of producing a final version of a new *MUTCD*. If further discussion would be helpful, we would be happy meet at your convenience.

Sincerely,



Corinne Kisner

Executive Director, National Association of City Transportation Officials



Jeffrey F. Paniati, P.E.

Executive Director and CEO, Institute of Transportation Engineers

Attachments: Requests for Experimentation - Section 1B.06 **Experimentation**  
Decorative Treatments in Crosswalks - Section 3H.03 **Aesthetic Treatments in Crosswalks**  
Pedestrian Signal Warrants and Crosswalk Guidance - Section 3C.02 **Application of Crosswalk Markings**, Section 4C.05 **Pedestrian Signal Warrant**, and Section 4J.01 **Pedestrian Hybrid Beacons**

**Legend:** Base text shown in proposal is the Clean Proposed NPA text.

Recommendation for text to be added in final rule.

~~Recommendation for text to be deleted in final rule.~~

Recommendation for text to be moved/relocated in final rule.

Explanatory note: [Note that explains purpose of recommended change.]

## Requests for Experimentation

### Section 1B.06 Experimentation

*Guidance:*

*Before requesting permission to experiment with a new device or application, an owner of a site roadway open to public travel should first check for any laws, regulations, and/or directives covering the application of the MUTCD that might apply.*

Support:

A diagram indicating the process for experimenting with traffic control devices is shown in Figure 1B-1.

#### **Figure 1B-1. Process for Requesting and Conducting Experimentations for New Traffic Control Devices**

[Recommend revising Figure 1B-1 once final experimentation process is determined.]

[Recommend this text be added as guidance, replacing existing standard text on page 9, lines 23-44 of this section in the clean corrected NPA text.]

*Guidance:*

1. All initial requests for permission to experiment should contain the following:
  - A. A statement indicating the nature of the problem and a hypothesis establishing the premise of the experiment.
  - B. A description of the proposed change to the traffic control device or application of the traffic control device, including the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.
  - C. Illustrations that would help to explain the traffic control device or use of the traffic control device.
  - D. Any supporting data explaining how the traffic control device was developed, including if it has been tested, in what ways it was found to be adequate or inadequate, and how this choice of device or application was derived.
  - E. Comparison of the proposed device to other compliant devices or treatments, either individually or in combination, that address the same condition, if applicable.
  - F. The time period and location(s) of the experiment.
  - G. Control sites for comparison purposes.
  - H. A detailed research and evaluation plan that provides for close monitoring of the experimentation, throughout all stages of its field implementation. The evaluation plan shall include before and after studies as well as quantitative data describing the performance of the experimental device.
2. Once the request for experimentation from an agency is approved by FHWA, additional agencies may apply to be added under the same experiment by submitting a letter to FHWA containing the following:
  - A. A statement indicating which previously approved experiment they are applying to be added to and how the add-on experiment is in conformance with items 1A-1E and 1H above.
  - B. The proposed time period, location(s), and control sites for the add-on experiment.

## Decorative Treatments in Crosswalks

### Section 3H.03 Aesthetic Treatments in Crosswalks

Support:

If non-retroreflective colored pavement is used as a purely aesthetic treatment within the criteria presented in this Section and is not intended to communicate a regulatory, warning, or guidance message to road users, the colored pavement is not considered to be a traffic control device, even if it is located between the lines of a crosswalk.

Guidance:

~~Since the right-of-way is dedicated exclusively to highway-related functions, A policy for using aesthetic treatments in crosswalks should consider whether their use or design is appropriate for the right-of-way.~~

~~Colored pavement located between crosswalk lines should not use colors or patterns that degrade the contrast of white crosswalk lines, or that might be mistaken by road users as a traffic control application.~~

~~A crosswalk with aesthetic treatments should still be recognizable as a traffic control device.~~

~~Aesthetic treatments within crosswalks should only be used on roadways with a speed limit of 30 mph or less.~~

Support:

Examples of materials for the interior portions of a crosswalk include brick, paving bricks, paving stones, setts, cobbles, or other resources designed to simulate such paving. ~~Examples of geometries for the interior portions of a crosswalk include honeycomb, lattice, mesh, grid, and regular polygon patterns. Examples of colors for the interior portions of a crosswalk incorporated into the material or geometry are brick red, rust, brown, burgundy, clay, tan, or similar earth tone equivalents (see Figure 3H-1).~~

[Recommend Figure 3H.1 also be removed.]

**Standard:**

Option

1. Aesthetic treatments may be installed within any existing intersection crosswalk or midblock crosswalk where positive control is present in addition to the crosswalk, regardless of street classification, speed, or volume. These include crosswalks across signalized intersections and midblock crossings, across stop-controlled approaches, and at Pedestrian Hybrid Beacons.
2. Where positive control is not present, aesthetic treatments may be installed within any marked crosswalk on a street designated as local with a speed limit of 25 mph or lower.

~~Patterns that constitute a purely aesthetic treatment for the interior portion of a crosswalk shall be devoid of advertising, pictographs, symbols, multiple color arrangements counter to Paragraph 4, Patterns that constitute a purely aesthetic treatment for the interior portion of a crosswalk shall not be designed to encourage other road users such as pedestrians to loiter in the crosswalk, engage in the pattern, or otherwise not encourage those users to vacate the street in an expedient manner.~~

Standard:

- A. Crosswalks with aesthetic treatments shall include the same crosswalk elements as non-aesthetic crosswalks, such as solid white transverse lines for conventional crosswalks, solid white longitudinal lines for high-visibility crosswalks, or ladder-style markings for school crosswalks.
- B. Aesthetic treatment for the interior portion of a crosswalk shall be devoid of advertising.
- C. Aesthetic treatments in crosswalks shall not implement elements of retroreflectivity.

**D. Aesthetic treatments for the interior portions of crosswalks shall not be of a surface that can confuse vision-impaired pedestrians that rely on tactile treatments or cues for navigation.**

Option:

To create contrast, a gap of at least one-half of the width of the white transverse line used to establish the crosswalk may be used between the white transverse crosswalk line and the aesthetic treatment, such as unmarked pavement or a black contrast line.

## Pedestrian Signal Warrants and Crosswalk Guidance

### Section 3C.02 Application of Crosswalk Markings

~~Support: Chapter 4J contains information on Pedestrian Hybrid Beacons. Section 4S.03 contains information regarding Warning Beacons to provide active warning of a pedestrian's presence. Section 4U.02 contains information regarding In-Roadway Warning Lights at crosswalks. Chapter 7C contains information on school crosswalks. Chapter 7D contains information regarding school crossing supervision.~~

#### Option:

Crosswalks may be used to create a formal pedestrian crossing point at a location not controlled by a traffic signal or STOP sign.

Support: Depending on state and local law, the crosswalk creates an obligation to either yield to, or stop for, pedestrians and bicyclists occupying the crosswalk. Pedestrians are generally permitted to cross streets at all intersection locations, whether controlled or uncontrolled, and are permitted to cross at some midblock locations. The need for a marked crosswalk is based on the continuity of the pedestrian network, or the need to guide pedestrians to a specific place to cross a street.

#### Guidance:

~~Crosswalk markings should not be used indiscriminately. An engineering study should be performed before a marked crosswalk is installed at a location away from a traffic control signal or an approach controlled by a STOP or YIELD sign.~~

~~The following criteria should be considered in an engineering study for the installation of a marked crosswalk:~~

- ~~A. Total number of approach lanes,~~
- ~~B. The presence of a median,~~
- ~~C. The distance from adjacent signalized intersections where crosswalks are provided,~~
- ~~D. Pedestrian volumes,~~
- ~~E. Pedestrian ages,~~
- ~~F. Pedestrian delays,~~
- ~~G. Average daily traffic (ADT),~~
- ~~H. Speed limit or the 85th percentile speed,~~
- ~~I. The geometry of the crossing location,~~
- ~~J. The possible consolidation of multiple crossing points,~~
- ~~K. The availability of street lighting, and~~
- ~~L. Other appropriate factors.~~

The evaluation of a potential new crosswalk should consist of two independent steps under A and B:

- A. The need and demand for pedestrians to cross a roadway at a given location, which may indicate the need for a marked crosswalk or other traffic control, is influenced by a number of factors. In evaluating the need for a marked crosswalk at a given location, consideration should be given to:
  - 1. Existing and proposed or anticipated pedestrian paths of travel.
  - 2. The distance between existing crosswalks along a roadway, with special attention given to gaps between existing controlled crossing points.
  - 3. The presence of transit stops, bikeshare stations, and other transportation facilities that pedestrians need to access.
  - 4. Roadway development context and land use.

- B. Once the need has been identified for a marked crosswalk, the criteria described in Sections 4C.05, 4C.06, 4J, and 4L should be considered in an engineering study to determine the appropriate traffic control for the installation of a marked crosswalk.

A new marked crosswalk alone may not be sufficient to achieve yielding or stopping by motor vehicle drivers adequate for right-of-way assignment to pedestrians. ~~New marked crosswalks alone, without other measures designed to reduce traffic speeds, shorten crossing distances, enhance driver awareness of the crossing, and/or provide active warning of pedestrian presence, should not be installed across uncontrolled roadways~~

Additional traffic control features should be considered where any of the following conditions exist:

- A. The roadway has four or more lanes of travel without a raised median or pedestrian refuge island and an ADT of 12,000 vehicles per day or greater; or
- B. The roadway has four or more lanes of travel with a raised median or pedestrian refuge island and an ADT of 15,000 vehicles per day or greater, or
- C. The posted speed limit is 40 mph or greater, or
- D. A crash study reveals that multiple-threat crashes are the predominant crash type on a multilane approach or when adequate visibility cannot be provided ~~by parking prohibitions.~~

At locations controlled by traffic control signals or on approaches controlled by STOP or YIELD signs, crosswalk markings should be installed between pedestrian ramps if other markings are present on the roadway or where engineering judgment indicates they are needed to direct pedestrians to the proper crossing path(s). The engineering study may determine that the signal indication or beacon is not necessary at the crosswalk location, due to factors such as adequate sightlines, high yielding compliance by motorists, or geometric factors. If a crosswalk is installed at a location where no beacon or signal indication or STOP or YIELD sign is installed, the installation of in-street pedestrian (R1-6) signs should be considered.

#### **Section 4C.05 Pedestrian Signal Warrant**

[Recommend inserting this text at the beginning of Section 4C.05, page 367 line 28 of the clean corrected NPA text]

##### Guidance:

Where an established or planned crosswalk, or the crossing of a planned or existing trail, walkway, or bikeway over roadway exists, where a transit stop with scheduled service is located such that access to the stop requires crossing at an uncontrolled location, or where an existing uncontrolled legal crosswalk is at least 300' from the nearest controlled crossing, the need for a traffic signal should be considered where any of conditions A, B, or C are met:

- A. Pedestrians must cross at least two lanes of general traffic without an intervening accessible refuge; and
  - 1. Motor vehicle volumes exceed 15,000 vehicles per day; or
  - 2. Motor vehicle volumes exceed 9,000 vehicles per day and the posted or operating speed is 30 mph or greater; or
  - 3. Posted or operating speed is 40 mph or greater with any vehicle volume.

B. Pedestrians must cross at least three lanes of general traffic (including turn lanes) without an intervening accessible refuge and

- 1. Motor vehicle volumes exceed 12,000 vehicles per day; or
- 2. Motor vehicle volumes exceed 6,000 vehicles per day and the posted or operating speed is 30 mph or greater.

C. Posted or operating speeds of 40 mph or greater and an AADT of least 6,000 vehicles per day are present.

#### **Section 4J.01 Application of Pedestrian Hybrid Beacons**

Support:

A pedestrian hybrid beacon is a special type of hybrid beacon used to warn and control traffic at an unsignalized location to assist pedestrians in crossing a street or highway at a marked crosswalk.

Option:

A pedestrian hybrid beacon may be considered for installation to facilitate pedestrian crossings at a location that does not meet traffic signal warrants (see Chapter 4C), or at a location that meets traffic signal warrants under Sections 4C.05 and/or 4C.06 but a decision is made to not install a traffic control signal.

**Standard:**

**If used, pedestrian hybrid beacons shall be used in conjunction with signs and pavement markings to warn and control traffic at locations where pedestrians enter or cross a street or highway. A pedestrian hybrid beacon shall only be installed at a marked crosswalk.**

*Guidance:*

*If one of the signal warrants of Chapter 4C is met and a traffic control signal is justified by an engineering study, and if a decision is made to install a traffic control signal, it should be installed based upon the provisions of Chapters 4D through 4I and 4K.*

*If a traffic control signal is not justified under the signal warrants of Chapter 4C and if gaps in traffic are not adequate to permit pedestrians to cross, or if the speed for vehicles approaching on the major street is too high to permit pedestrians to cross, or if pedestrian delay is excessive, the need for a pedestrian hybrid beacon should be considered on the basis of an engineering study that considers major-street volumes, speeds, widths, and gaps in conjunction with pedestrian volumes, walking speeds, and delay.*

*Where an established or planned crosswalk, or the crossing of a planned or existing trail, walkway, or bikeway over roadway exists, where a transit stop with scheduled service is located such that access to the stop requires crossing at an uncontrolled location, or where an existing uncontrolled legal crosswalk is at least 300' from the nearest controlled crossing, the need for a Pedestrian Hybrid Beacon should be considered where any of conditions A, B, or C are met:*

- A. *Pedestrians must cross at least two lanes of general traffic without an intervening accessible refuge; and*
  1. *Motor vehicle volumes exceed 15,000 vehicles per day; or*
  2. *Motor vehicle volumes exceed 9,000 vehicles per day and the posted or operating speed is 30 mph or greater; or*
  3. *Posted or operating speed is 40 mph or greater with any vehicle volume.*
- B. *Pedestrians must cross at least three lanes of general traffic (including turn lanes) without an intervening accessible refuge; and*
  1. *Motor vehicle volumes exceed 12,000 vehicles per day; or*
  2. *Motor vehicle volumes exceed 6,000 vehicles per day and the posted or operating speed is 30 mph or greater*
- C. *Posted or operating speeds of 40 mph or greater and an AADT of least 6,000 vehicles per day are present.*

*For a major street where the posted or statutory speed limit or the 85th-percentile speed is 35 mph or less, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any four consecutive 15-*

*minute periods) of an average day falls above the applicable curve in Figure 4J-1 for the length of the crosswalk.*

*For a major street where the posted or statutory speed limit or the 85th-percentile speed exceeds 35 mph, the need for a pedestrian hybrid beacon should be considered if the engineering study finds that the plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding total of all pedestrians crossing the major street for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable curve in Figure 4J-2 for the length of the crosswalk.*

*For crosswalks that have lengths other than the four that are specifically shown in Figures 4J-1 and 4J-2, the values should be interpolated between the curves.*



## EXHIBIT III

**City of Tampa**  
**Transportation and Stormwater Services**  
 306 E. Jackson Street  
 Tampa, Florida 33602  
**(813) 274-7884**

Site Code:  
 Station ID:  
 SPD\_N MACDILL AVE  
 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	50th Percent	85th Percent
05/14/19	0	0	1	3	3	4	2	2	1	0	0	0	0	0	16	36	46
01:00	0	0	0	1	5	2	1	1	0	0	0	0	0	0	10	33	42
02:00	0	1	0	2	3	2	0	0	1	0	0	0	0	0	9	32	39
03:00	0	1	3	7	7	2	5	1	0	0	0	0	0	0	26	31	42
04:00	0	1	1	14	30	26	6	2	1	0	0	0	0	0	81	34	39
05:00	3	0	6	47	86	75	<b>29</b>	3	<b>3</b>	0	0	0	0	0	252	34	39
06:00	82	18	47	112	160	71	25	3	2	<b>1</b>	0	0	0	0	<b>521</b>	30	36
07:00	<b>192</b>	<b>128</b>	<b>70</b>	65	39	9	5	0	0	0	0	0	0	0	508	17	28
08:00	43	3	20	106	<b>204</b>	82	7	<b>5</b>	0	0	0	0	0	0	470	31	36
09:00	36	1	25	103	151	<b>89</b>	27	5	0	0	0	0	0	0	437	31	38
10:00	34	1	24	<b>157</b>	202	74	18	2	0	0	0	0	0	0	512	30	36
11:00	51	12	28	113	185	81	28	4	1	0	0	0	0	0	503	31	37
12 PM	30	2	23	96	206	115	20	2	0	0	0	0	0	0	494	32	37
13:00	77	30	50	126	140	47	12	1	1	0	0	0	0	0	484	28	34
14:00	<b>92</b>	<b>95</b>	<b>58</b>	114	129	75	10	3	0	0	0	0	0	0	576	26	35
15:00	62	4	21	<b>167</b>	250	103	29	3	0	0	0	0	0	0	639	31	36
16:00	57	6	21	160	<b>260</b>	<b>147</b>	<b>34</b>	1	0	0	0	0	0	0	<b>686</b>	31	37
17:00	38	3	13	84	217	127	30	<b>6</b>	<b>2</b>	0	0	0	0	0	520	32	38
18:00	21	0	19	57	114	83	27	0	0	0	0	0	0	0	321	32	38
19:00	8	2	8	51	84	61	24	2	1	0	0	0	0	0	241	33	39
20:00	1	1	10	34	69	34	5	2	0	0	0	0	0	0	156	32	37
21:00	0	0	1	16	39	29	9	0	0	0	0	0	0	0	94	33	39
22:00	0	0	0	10	26	22	2	1	0	0	0	0	0	0	61	33	38
23:00	0	0	1	5	9	4	4	1	0	0	0	0	0	0	24	33	41
Total	827	309	450	1650	2618	1364	359	50	13	1	0	0	0	0	7641		
Percent	10.8%	4.0%	5.9%	21.6%	34.3%	17.9%	4.7%	0.7%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	10:00	08:00	09:00	05:00	08:00	05:00	06:00					06:00		
Vol.	192	128	70	157	204	89	29	5	3	1					521		
PM Peak	14:00	14:00	14:00	15:00	16:00	16:00	16:00	17:00	17:00						16:00		
Vol.	92	95	58	167	260	147	34	6	2						686		

Statistics	85th Percentile :	37 MPH
	50th Percentile :	31 MPH
	10 MPH Pace Speed :	26-35 MPH
	Number in Pace :	4268
	Number of Vehicles > 45 MPH :	64
	Percent of Vehicles > 45 MPH :	0.8%

**City of Tampa**  
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Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	50th Percent	85th Percent
05/15/19	0	0	1	2	3	8	2	1	0	0	0	0	0	0	17	36	41
01:00	0	0	2	1	7	6	3	3	0	0	0	0	0	0	22	35	44
02:00	0	1	1	3	5	2	0	0	0	0	0	0	0	0	12	30	35
03:00	0	1	1	3	9	14	3	1	1	0	0	0	0	0	33	35	40
04:00	4	0	3	12	32	27	13	2	0	0	0	0	0	0	93	34	40
05:00	6	1	6	35	113	57	18	1	1	0	0	0	0	0	238	33	38
06:00	45	14	57	<b>148</b>	183	86	19	4	0	<b>1</b>	0	0	0	0	557	30	36
07:00	<b>162</b>	<b>157</b>	<b>114</b>	77	33	13	2	0	0	0	0	0	0	0	<b>558</b>	18	27
08:00	41	5	15	127	<b>197</b>	76	24	1	0	0	0	0	0	0	486	31	36
09:00	35	7	29	110	170	88	<b>30</b>	3	0	1	0	0	0	<b>1</b>	474	31	37
10:00	35	0	15	96	185	111	30	<b>8</b>	1	0	0	0	0	0	481	32	38
11:00	38	2	14	99	197	<b>113</b>	30	6	<b>2</b>	0	0	0	0	0	501	32	38
12 PM	41	4	19	125	187	81	17	4	<b>1</b>	0	0	0	0	0	479	31	36
13:00	<b>88</b>	32	35	100	154	63	12	2	0	0	0	0	0	0	486	29	35
14:00	81	<b>91</b>	<b>93</b>	87	110	60	11	2	0	0	0	0	0	0	535	25	34
15:00	76	13	28	125	226	127	30	4	1	0	0	0	0	0	630	31	37
16:00	51	2	19	<b>185</b>	<b>288</b>	125	29	3	1	0	0	0	0	0	<b>703</b>	31	37
17:00	60	6	13	121	222	<b>135</b>	<b>40</b>	<b>10</b>	1	<b>1</b>	0	0	0	0	609	32	38
18:00	34	2	13	53	142	94	20	1	1	0	0	0	<b>1</b>	0	361	32	38
19:00	27	3	7	69	103	50	21	7	0	0	0	0	0	0	287	31	38
20:00	5	0	14	41	89	42	8	3	0	0	0	0	0	<b>1</b>	203	32	37
21:00	1	1	1	15	34	36	4	1	0	0	0	0	0	0	93	34	38
22:00	0	0	3	18	24	15	6	3	0	0	0	0	0	0	69	32	39
23:00	0	3	2	6	9	15	6	0	0	0	0	0	0	0	41	35	39
Total	830	345	505	1658	2722	1444	378	70	10	3	0	0	1	2	7968		
Percent	10.4%	4.3%	6.3%	20.8%	34.2%	18.1%	4.7%	0.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	06:00	08:00	11:00	09:00	10:00	11:00	06:00				09:00	07:00		
Vol.	162	157	114	148	197	113	30	8	2	1				1	558		
PM Peak	13:00	14:00	14:00	16:00	16:00	17:00	17:00	17:00	12:00	17:00			18:00	20:00	16:00		
Vol.	88	91	93	185	288	135	40	10	1	1			1	1	703		

Statistics	85th Percentile :	37 MPH
	50th Percentile :	31 MPH
	10 MPH Pace Speed :	26-35 MPH
	Number in Pace :	4380
	Number of Vehicles > 45 MPH :	86
	Percent of Vehicles > 45 MPH :	1.1%

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05/16/19	2	0	0	6	7	5	2	0	0	0	0	0	0	0	22	32	38
01:00	0	0	0	2	4	4	1	0	0	0	0	0	0	0	11	34	39
02:00	0	0	1	0	9	3	2	0	0	0	0	0	0	0	15	33	39
03:00	0	1	2	3	11	5	5	1	0	0	0	0	0	0	28	33	41
04:00	3	0	0	10	28	22	8	3	<b>2</b>	0	0	0	0	0	76	34	40
05:00	7	1	8	25	87	84	32	2	0	0	0	0	0	0	246	34	39
06:00	54	4	37	<b>137</b>	204	90	22	<b>9</b>	0	0	0	0	0	0	<b>557</b>	31	37
07:00	<b>195</b>	<b>144</b>	<b>87</b>	56	39	14	2	2	0	0	0	0	0	0	539	17	27
08:00	94	35	27	94	179	78	19	3	0	0	0	0	0	0	529	30	36
09:00	78	13	39	107	172	<b>92</b>	23	4	2	0	0	0	0	0	530	30	37
10:00	51	10	36	132	196	91	30	2	1	0	0	0	0	0	549	31	37
11:00	53	7	18	112	<b>219</b>	90	<b>33</b>	5	0	0	0	0	0	0	537	31	37
12 PM	47	1	26	125	182	88	21	<b>7</b>	<b>2</b>	0	0	0	0	0	499	31	37
13:00	88	26	41	112	136	61	8	1	1	0	0	0	0	0	474	28	34
14:00	<b>100</b>	<b>96</b>	<b>98</b>	111	100	51	10	1	0	0	0	0	0	<b>1</b>	568	24	33
15:00	66	5	26	145	256	128	19	4	0	0	0	0	0	0	649	31	37
16:00	81	2	32	<b>193</b>	<b>286</b>	<b>137</b>	22	4	0	<b>1</b>	0	0	0	0	<b>758</b>	31	36
17:00	54	4	11	79	193	132	<b>33</b>	3	1	0	0	0	0	0	510	32	38
18:00	23	1	10	77	126	78	26	5	0	1	0	0	0	0	347	32	38
19:00	19	2	12	55	93	62	15	0	0	0	0	0	0	0	258	32	38
20:00	5	0	9	43	66	36	9	1	0	0	0	0	0	0	169	32	37
21:00	3	1	5	35	48	25	2	1	0	0	0	0	0	0	120	31	36
22:00	1	0	2	12	30	30	8	1	0	0	0	0	0	0	84	34	39
23:00	0	0	2	3	21	11	1	2	0	0	0	0	0	0	40	33	38
Total	1024	353	529	1674	2692	1417	353	61	9	2	0	0	0	1	8115		
Percent	12.6%	4.3%	6.5%	20.6%	33.2%	17.5%	4.3%	0.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	06:00	11:00	09:00	11:00	06:00	04:00						06:00		
Vol.	195	144	87	137	219	92	33	9	2						557		
PM Peak	14:00	14:00	14:00	16:00	16:00	16:00	17:00	12:00	12:00	16:00				14:00	16:00		
Vol.	100	96	98	193	286	137	33	7	2	1				1	758		

Statistics	85th Percentile :	37 MPH
	50th Percentile :	30 MPH
	10 MPH Pace Speed :	26-35 MPH
	Number in Pace :	4366
	Number of Vehicles > 45 MPH :	73
	Percent of Vehicles > 45 MPH :	0.9%

**City of Tampa**  
**Transportation and Stormwater Services**  
 306 E. Jackson Street  
 Tampa, Florida 33602  
**(813) 274-7884**

Site Code:  
 Station ID:  
 SPD\_N MACDILL AVE  
 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

NB

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	50th Percent	85th Percent
	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
05/14/19	0	0	0	3	2	1	7	2	0	0	0	0	0	0	15	41	44
01:00	0	0	0	0	1	4	4	2	2	0	1	0	0	0	14	42	52
02:00	0	0	0	1	1	2	6	1	0	1	0	0	0	0	12	41	45
03:00	0	0	0	1	4	2	5	5	4	4	0	0	0	0	25	45	55
04:00	1	0	1	7	15	11	12	11	6	5	2	0	0	0	71	40	51
05:00	8	1	6	12	28	60	54	50	<b>29</b>	<b>11</b>	<b>3</b>	0	0	0	262	41	50
06:00	108	30	55	68	96	75	69	49	19	6	0	0	0	0	<b>575</b>	31	44
07:00	<b>147</b>	<b>120</b>	<b>133</b>	59	38	17	9	0	1	0	0	0	0	0	524	19	28
08:00	51	20	39	64	105	<b>132</b>	80	27	15	0	1	0	0	0	534	34	42
09:00	43	3	16	52	113	113	<b>90</b>	36	18	5	0	0	<b>1</b>	0	490	35	44
10:00	51	9	29	64	<b>121</b>	122	77	31	5	2	0	0	0	0	511	34	42
11:00	48	1	18	<b>80</b>	86	123	80	<b>55</b>	13	2	1	0	0	0	507	35	44
12 PM	63	16	32	91	<b>145</b>	122	88	41	<b>22</b>	2	1	0	0	0	623	33	43
13:00	93	56	54	69	105	93	57	21	0	0	0	0	0	0	548	30	39
14:00	122	<b>111</b>	<b>105</b>	75	79	67	41	9	4	0	0	0	0	0	613	23	37
15:00	<b>132</b>	36	56	<b>102</b>	109	<b>128</b>	79	26	9	2	0	0	0	0	679	30	40
16:00	126	24	52	95	120	121	105	43	15	3	<b>3</b>	0	<b>2</b>	0	<b>709</b>	32	43
17:00	54	8	31	57	91	121	<b>119</b>	39	20	4	0	<b>2</b>	0	0	546	36	44
18:00	34	8	21	48	72	96	75	<b>44</b>	8	3	2	2	0	0	413	36	44
19:00	16	3	12	38	60	83	57	31	17	<b>5</b>	1	0	0	0	323	36	45
20:00	3	0	3	20	45	45	41	21	9	1	0	0	0	0	188	37	45
21:00	1	1	4	9	20	34	36	16	12	1	0	0	0	0	134	39	47
22:00	0	1	0	4	12	18	24	16	5	3	0	0	0	0	83	41	48
23:00	0	0	0	0	3	9	11	5	2	1	3	1	0	0	35	42	54
Total	1101	448	667	1019	1471	1599	1226	581	235	61	18	5	3	0	8434		
Percent	13.1%	5.3%	7.9%	12.1%	17.4%	19.0%	14.5%	6.9%	2.8%	0.7%	0.2%	0.1%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	11:00	10:00	08:00	09:00	11:00	05:00	05:00	05:00		09:00		06:00		
Vol.	147	120	133	80	121	132	90	55	29	11	3		1		575		
PM Peak	15:00	14:00	14:00	15:00	12:00	15:00	17:00	18:00	12:00	19:00	16:00	17:00	16:00		16:00		
Vol.	132	111	105	102	145	128	119	44	22	5	3	2	2		709		

Statistics	85th Percentile :	43 MPH
	50th Percentile :	33 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	3070
	Number of Vehicles > 45 MPH :	903
	Percent of Vehicles > 45 MPH :	10.7%

**City of Tampa**  
**Transportation and Stormwater Services**  
 306 E. Jackson Street  
 Tampa, Florida 33602  
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Site Code:  
 Station ID:  
 SPD\_N MACDILL AVE  
 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

NB

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	50th Percent	85th Percent
	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
05/15/19	0	0	0	2	4	10	2	2	3	3	2	0	0	0	28	38	56
01:00	0	0	0	2	4	6	1	3	2	0	0	0	0	0	18	37	48
02:00	0	0	0	0	0	2	4	2	2	0	1	0	0	0	11	44	53
03:00	1	0	0	1	2	5	4	2	3	0	0	<b>1</b>	0	0	19	40	51
04:00	0	0	0	1	2	21	11	15	12	4	1	0	0	0	67	44	52
05:00	10	1	5	17	46	64	42	<b>52</b>	<b>31</b>	<b>14</b>	<b>3</b>	0	<b>2</b>	0	287	40	51
06:00	85	25	57	<b>79</b>	97	98	91	32	13	1	1	0	0	0	<b>579</b>	32	42
07:00	<b>141</b>	<b>113</b>	<b>153</b>	51	31	25	15	6	1	0	0	0	0	0	536	20	29
08:00	50	10	23	45	99	<b>130</b>	95	30	17	2	1	1	0	0	503	35	43
09:00	41	5	20	56	107	118	89	40	10	3	0	0	0	0	489	35	43
10:00	42	1	18	40	91	103	<b>106</b>	50	27	5	1	0	0	0	484	37	46
11:00	42	4	30	62	<b>125</b>	121	103	34	10	4	1	0	0	0	536	35	43
12 PM	61	19	40	95	127	107	79	39	11	2	0	<b>1</b>	0	0	581	32	42
13:00	86	42	57	90	112	92	49	30	10	1	0	0	0	0	569	30	40
14:00	<b>164</b>	<b>107</b>	<b>98</b>	78	83	66	45	8	1	0	<b>2</b>	0	0	0	652	22	36
15:00	134	30	70	95	135	97	69	30	7	3	0	0	0	0	670	30	40
16:00	159	29	57	<b>107</b>	<b>158</b>	124	64	20	10	2	0	0	0	0	<b>730</b>	30	39
17:00	95	28	53	81	122	<b>132</b>	68	29	11	1	0	0	0	0	620	32	41
18:00	34	3	13	40	84	105	<b>87</b>	<b>49</b>	<b>19</b>	<b>5</b>	1	0	0	0	440	37	45
19:00	24	2	24	64	81	81	58	26	6	0	0	0	0	0	366	34	43
20:00	9	2	11	27	60	56	41	20	6	1	1	0	0	0	234	35	44
21:00	4	0	3	20	33	44	33	17	4	0	2	0	0	0	160	37	44
22:00	1	0	0	12	21	30	30	12	4	2	1	0	0	0	113	38	45
23:00	0	0	0	3	7	9	7	2	3	1	0	0	0	0	32	38	48
Total	1183	421	732	1068	1631	1646	1193	550	223	54	18	3	2	0	8724		
Percent	13.6%	4.8%	8.4%	12.2%	18.7%	18.9%	13.7%	6.3%	2.6%	0.6%	0.2%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	06:00	11:00	08:00	10:00	05:00	05:00	05:00	05:00	03:00	05:00		06:00		
Vol.	141	113	153	79	125	130	106	52	31	14	3	1	2		579		
PM Peak	14:00	14:00	14:00	16:00	16:00	17:00	18:00	18:00	18:00	18:00	14:00	12:00			16:00		
Vol.	164	107	98	107	158	132	87	49	19	5	2	1		730			

Statistics	85th Percentile :	43 MPH
	50th Percentile :	32 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	3277
	Number of Vehicles > 45 MPH :	850
	Percent of Vehicles > 45 MPH :	9.7%

**City of Tampa**  
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 306 E. Jackson Street  
 Tampa, Florida 33602  
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Site Code:  
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 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

NB

Start Time	1	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	50th Percent	85th Percent
	15	20	25	30	35	40	45	50	55	60	65	70	75	999			
05/16/19	1	0	0	2	2	7	7	5	1	0	0	0	0	0	25	40	47
01:00	0	0	1	1	1	1	10	5	1	2	0	0	0	0	22	43	49
02:00	0	0	0	0	1	5	2	3	2	0	1	0	0	0	14	42	52
03:00	0	0	1	4	2	3	2	5	5	0	0	<b>1</b>	0	0	23	43	52
04:00	1	1	1	2	4	16	11	12	6	3	<b>2</b>	0	0	0	59	42	51
05:00	14	1	6	23	38	43	63	<b>51</b>	<b>23</b>	<b>7</b>	1	1	0	0	271	40	49
06:00	82	14	46	78	<b>131</b>	107	75	42	5	5	2	0	0	0	<b>587</b>	32	42
07:00	<b>149</b>	<b>141</b>	<b>118</b>	55	34	21	9	4	3	0	0	0	0	0	534	19	29
08:00	67	12	52	<b>91</b>	113	82	58	26	7	2	0	0	0	0	510	31	41
09:00	50	16	33	60	90	104	<b>79</b>	34	9	0	0	0	0	0	475	34	43
10:00	54	12	35	79	130	<b>127</b>	62	26	6	3	1	0	0	0	535	33	41
11:00	80	9	28	76	109	122	75	26	7	5	0	1	0	0	538	33	42
12 PM	77	18	51	105	123	<b>136</b>	<b>93</b>	35	4	2	<b>2</b>	0	0	0	646	32	42
13:00	104	54	67	82	95	103	57	15	4	0	0	0	0	0	581	28	39
14:00	141	<b>96</b>	<b>94</b>	78	100	58	35	9	5	0	0	0	0	0	616	23	36
15:00	107	46	77	<b>127</b>	<b>132</b>	131	67	32	7	1	0	0	0	0	<b>727</b>	30	39
16:00	<b>163</b>	38	78	112	129	110	69	13	11	2	2	0	0	0	727	28	39
17:00	52	26	50	83	117	117	64	29	9	3	0	0	0	0	550	32	41
18:00	18	3	12	45	83	93	78	<b>38</b>	<b>24</b>	3	0	0	0	0	397	37	45
19:00	17	1	18	55	84	95	45	22	9	2	1	0	0	0	349	34	42
20:00	7	0	9	32	47	59	41	28	1	<b>4</b>	0	0	0	0	228	36	44
21:00	3	0	4	17	43	51	36	18	10	1	0	0	0	0	183	37	45
22:00	2	0	1	7	21	27	25	16	8	2	0	0	0	0	109	39	48
23:00	1	0	2	1	5	21	17	6	5	2	0	<b>1</b>	0	0	61	40	49
Total	1190	488	784	1215	1634	1639	1080	500	172	49	12	4	0	0	8767		
Percent	13.6%	5.6%	8.9%	13.9%	18.6%	18.7%	12.3%	5.7%	2.0%	0.6%	0.1%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	08:00	06:00	10:00	09:00	05:00	05:00	05:00	04:00	03:00			06:00		
Vol.	149	141	118	91	131	127	79	51	23	7	2	1			587		
PM Peak	16:00	14:00	14:00	15:00	15:00	12:00	12:00	18:00	18:00	20:00	12:00	23:00			15:00		
Vol.	163	96	94	127	132	136	93	38	24	4	2	1			727		

Statistics	85th Percentile :	42 MPH
	50th Percentile :	32 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	3273
	Number of Vehicles > 45 MPH :	737
	Percent of Vehicles > 45 MPH :	8.4%

**City of Tampa**  
**Transportation and Stormwater Services**  
 306 E. Jackson Street  
 Tampa, Florida 33602  
**(813) 274-7884**

Site Code:  
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 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

SB, NB	Start Time	15	16	21	26	31	36	41	46	51	56	61	66	71	76	Total	50th Percent	85th Percent
05/14/19	0	0	1	6	5	5	9	4	1	0	0	0	0	0	0	31	38	45
01:00	0	0	0	1	6	6	5	3	2	0	1	0	0	0	0	24	39	49
02:00	0	1	0	3	4	4	6	1	1	1	0	0	0	0	0	21	38	44
03:00	0	1	3	8	11	4	10	6	4	4	0	0	0	0	0	51	38	50
04:00	1	1	2	21	45	37	18	13	7	5	2	0	0	0	0	152	35	46
05:00	11	1	12	59	114	135	83	53	<b>32</b>	<b>11</b>	<b>3</b>	0	0	0	0	514	37	47
06:00	190	48	102	180	256	146	94	52	21	7	0	0	0	0	0	<b>1096</b>	30	40
07:00	<b>339</b>	<b>248</b>	<b>203</b>	124	77	26	14	0	1	0	0	0	0	0	0	1032	18	28
08:00	94	23	59	170	309	<b>214</b>	87	32	15	0	1	0	0	0	0	1004	32	39
09:00	79	4	41	155	264	202	<b>117</b>	41	18	5	0	0	<b>1</b>	0	0	927	33	41
10:00	85	10	53	<b>221</b>	<b>323</b>	196	95	33	5	2	0	0	0	0	0	1023	32	39
11:00	99	13	46	193	271	204	108	<b>59</b>	14	2	1	0	0	0	0	1010	32	41
12 PM	93	18	55	187	351	237	108	43	<b>22</b>	2	1	0	0	0	0	1117	32	40
13:00	170	86	104	195	245	140	69	22	1	0	0	0	0	0	0	1032	28	37
14:00	<b>214</b>	<b>206</b>	<b>163</b>	189	208	142	51	12	4	0	0	0	0	0	0	1189	25	36
15:00	194	40	77	<b>269</b>	359	231	108	29	9	2	0	0	0	0	0	1318	31	38
16:00	183	30	73	255	<b>380</b>	<b>268</b>	139	44	15	3	<b>3</b>	0	<b>2</b>	0	0	<b>1395</b>	32	39
17:00	92	11	44	141	308	248	<b>149</b>	<b>45</b>	22	4	0	<b>2</b>	0	0	0	1066	33	42
18:00	55	8	40	105	186	179	102	44	8	3	2	2	0	0	0	734	34	42
19:00	24	5	20	89	144	144	81	33	18	<b>5</b>	1	0	0	0	0	564	34	43
20:00	4	1	13	54	114	79	46	23	9	1	0	0	0	0	0	344	34	42
21:00	1	1	5	25	59	63	45	16	12	1	0	0	0	0	0	228	36	44
22:00	0	1	0	14	38	40	26	17	5	3	0	0	0	0	0	144	37	46
23:00	0	0	1	5	12	13	15	6	2	1	3	1	0	0	0	59	39	48
Total	1928	757	1117	2669	4089	2963	1585	631	248	62	18	5	3	0	0	16075		
Percent	12.0%	4.7%	6.9%	16.6%	25.4%	18.4%	9.9%	3.9%	1.5%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	10:00	10:00	08:00	09:00	11:00	05:00	05:00	05:00			09:00		06:00		
Vol.	339	248	203	221	323	214	117	59	32	11	3			1		1096		
PM Peak	14:00	14:00	14:00	15:00	16:00	16:00	17:00	17:00	12:00	19:00	16:00	17:00	16:00	16:00		16:00		
Vol.	214	206	163	269	380	268	149	45	22	5	3	2	2	2		1395		

Statistics	85th Percentile :	40 MPH
	50th Percentile :	31 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	7052
	Number of Vehicles > 45 MPH :	967
	Percent of Vehicles > 45 MPH :	6.0%



**City of Tampa**  
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 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.000 Undefined

SB, NB	Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total	50th Percent	85th Percent
05/15/19	0	0	0	1	4	7	18	4	3	3	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	37	52	
01:00	0	0	2	3	11	12	4	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	36	46		
02:00	0	1	1	3	5	4	4	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	36	48		
03:00	1	1	1	4	11	19	7	3	4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	37	45		
04:00	4	0	3	13	34	48	24	17	12	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	160	37	47		
05:00	16	2	11	52	159	121	60	53	32	14	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	525	35	47		
06:00	130	39	114	227	280	184	110	36	13	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1136	31	39		
07:00	303	270	267	128	64	38	17	6	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1094	19	28		
08:00	91	15	38	172	296	206	119	31	17	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	989	33	40		
09:00	76	12	49	166	277	206	119	43	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	963	33	41		
10:00	77	1	33	136	276	214	136	58	28	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	965	34	43		
11:00	80	6	44	161	322	234	133	40	12	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1037	33	41		
12 PM	102	23	59	220	314	188	96	43	12	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1060	32	39		
13:00	174	74	92	190	266	155	61	32	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1055	29	38		
14:00	245	198	191	165	193	126	56	10	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1187	23	35		
15:00	210	43	98	220	361	224	99	34	8	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1300	31	38		
16:00	210	31	76	292	446	249	93	23	11	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1433	31	38		
17:00	155	34	66	202	344	267	108	39	12	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1229	32	39		
18:00	68	5	26	93	226	199	107	50	20	5	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	801	34	42		
19:00	51	5	31	133	184	131	79	33	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	653	32	41		
20:00	14	2	25	68	149	98	49	23	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	437	33	41		
21:00	5	1	4	35	67	80	37	18	4	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	253	35	43		
22:00	1	0	3	30	45	45	36	15	4	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	182	36	44		
23:00	0	3	2	9	16	24	13	2	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	73	36	43		
Total	2013	766	1237	2726	4353	3090	1571	620	233	57	18	3	3	2	16692																
Percent	12.1%	4.6%	7.4%	16.3%	26.1%	18.5%	9.4%	3.7%	1.4%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%																
AM Peak	07:00	07:00	07:00	06:00	11:00	11:00	10:00	10:00	05:00	05:00	05:00	03:00	05:00	09:00	06:00																
Vol.	303	270	267	227	322	234	136	58	32	14	3	1	2	1	1136																
PM Peak	14:00	14:00	14:00	16:00	16:00	17:00	17:00	18:00	18:00	18:00	14:00	12:00	18:00	20:00	16:00																
Vol.	245	198	191	292	446	267	108	50	20	5	2	1	1	1	1433																

Statistics	85th Percentile :	40 MPH
	50th Percentile :	31 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	7443
	Number of Vehicles > 45 MPH :	936
	Percent of Vehicles > 45 MPH :	5.6%

**City of Tampa**  
**Transportation and Stormwater Services**  
 306 E. Jackson Street  
 Tampa, Florida 33602  
**(813) 274-7884**

Site Code:  
 Station ID:  
 SPD\_N MACDILL AVE  
 W MAIN ST TO W WALNUT ST  
 Latitude: 0' 0.0000 Undefined

SB, NB	Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total	50th Percent	85th Percent
05/16/19		3	0	0	0	8	9	12	9	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	36	44	
01:00		0	0	1	3	5	5	11	5	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	41	48		
02:00		0	0	1	0	10	8	4	3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	37	47		
03:00		0	1	3	7	13	8	7	6	5	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	51	35	48		
04:00		4	1	1	12	32	38	19	15	8	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	135	37	47		
05:00		21	2	14	48	125	127	95	53	23	7	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	517	36	45		
06:00		136	18	83	215	335	197	97	51	5	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1144	31	39		
07:00		344	285	205	111	73	35	11	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1073	18	28		
08:00		161	47	79	185	292	160	77	29	7	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1039	30	38		
09:00		128	29	72	167	262	196	102	38	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1005	32	40		
10:00		105	22	71	211	326	218	92	28	7	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1084	32	39		
11:00		133	16	46	188	328	212	108	31	7	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1075	32	39		
12 PM		124	19	77	230	305	224	114	42	6	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1145	32	39		
13:00		192	80	108	194	231	164	65	16	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1055	28	37		
14:00		241	192	192	189	200	109	45	10	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1184	24	34		
15:00		173	51	103	272	388	259	86	36	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1376	31	38		
16:00		244	40	110	305	415	247	91	17	11	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1485	30	38		
17:00		106	30	61	162	310	249	97	32	10	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1060	32	39		
18:00		41	4	22	122	209	171	104	43	24	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	744	34	43		
19:00		36	3	30	110	177	157	60	22	9	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	607	33	40		
20:00		12	0	18	75	113	95	50	29	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	397	34	42		
21:00		6	1	9	52	91	76	38	19	10	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	303	34	42		
22:00		3	0	3	19	51	57	33	17	8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	193	36	44		
23:00		1	0	4	4	26	32	18	8	5	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	101	37	45		
Total		2214	841	1313	2889	4326	3056	1433	561	181	51	12	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	16882			
Percent		13.1%	5.0%	7.8%	17.1%	25.6%	18.1%	8.5%	3.3%	1.1%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
AM Peak	07:00	07:00	07:00	06:00	06:00	10:00	11:00	05:00	05:00	05:00	04:00	03:00																06:00			
Vol.	344	285	205	215	335	218	108	53	23	7	2	1																1144			
PM Peak	16:00	14:00	14:00	16:00	16:00	15:00	12:00	18:00	18:00	18:00	12:00	23:00																14:00			
Vol.	244	192	192	305	415	259	114	43	24	4	2	1																1485			

Statistics	85th Percentile :	39 MPH
	50th Percentile :	31 MPH
	10 MPH Pace Speed :	31-40 MPH
	Number in Pace :	7382
	Number of Vehicles > 45 MPH :	810
	Percent of Vehicles > 45 MPH :	4.8%

EventID	EventCrashDate	EventCrashTime	EventOnStreet	EventCrossStreet	CrashType	EventCityCode	EventLightingCondition	Weather	HighestSeverity	RoadIntersectionType	RoadTrafficControl	RoadSystemType	RoadSurfaceCondition
89154904	7/2/2019	10:01:00	N MACDILL AVE	W MAIN ST	Hit Fixed Object	TAMPA	Daylight	Clear	None	Not at Intersection	No Controls	Local	Dry
89153498	6/4/2019	10:18:00	W CHESTNUT ST	N MACDILL AVE	Left Turn	TAMPA	Daylight	Clear	None	Four-Way Intersection	No Controls	Local	Dry
88766972	5/2/2019	16:40:00	N MACDILL AVE	W MAIN ST	Rear End	TAMPA	Daylight	Rain	None	Four-Way Intersection	No Controls	Local	Dry
88766102	4/16/2019	18:32:00	N MACDILL AVE	W CHESTNUT ST	Angle	TAMPA	Daylight	Clear	Possible	T-Intersection	Traffic Control Signal	Local	Dry
88764860	3/26/2019	12:20:00	N MACDILL AVE	W MAIN ST	Rear End	TAMPA	Daylight	Cloudy	None	T-Intersection	No Controls	Local	Dry
88764865	3/26/2019	13:04:00	N MACDILL AVE	W MAIN ST	Pedestrian	TAMPA	Daylight	Clear	Fatal	Not at Intersection	Traffic Control Signal	Local	Dry
87528514	8/9/2018	17:42:00	MACDILL AVE	CHESTNUT ST	Rear End	TAMPA	Dusk	Clear	None	T-Intersection	No Controls	Local	Dry
87527494	7/19/2018	18:35:00	MACDILL AVE N	CHESTNUT ST W	Rear End	TAMPA	Daylight	Clear	Possible	Not at Intersection	Traffic Control Signal	Local	Dry
87516009	12/8/2017	8:45:00	MACDILL AVE N	CHESTNUT ST W	Angle	TAMPA	Daylight	Clear	None	T-Intersection	No Controls	Local	Dry
87514861	11/15/2017	15:20:00	MACDILL AVE N	MAIN ST W	Left Turn	TAMPA	Daylight	Clear	Possible	Four-Way Intersection	No Controls	Local	Dry