

#### CITY OF SOUTH PASADENA MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION REGULAR MEETING AGENDA

#### Council Chamber 1424 Mission Street, South Pasadena, CA 91030 April 20, 2021, at 6:30 p.m.

South Pasadena Mobility and Transportation Infrastructure Commission Statement of Civility
As your elected governing board, we will treat each other, members of the public, and city employees with patience, civility and courtesy as a model of the same behavior we wish to reflect in South Pasadena for the conduct of all city business and community participation. The decisions made tonight will be for the benefit of the South Pasadena community and not for personal gain.

#### **NOTICE ON PUBLIC PARTICIPATION & ACCESSIBILITY**

Pursuant to Section 3 of Executive Order N-29-20, issued by Governor Newsom on March 17, 2020, the regular meeting of the Mobility and Transportation Infrastructure Commission (MTIC) for April 20, 2021, will be conducted remotely and held by Zoom video conference.

Please be advised that pursuant to the Executive Order, and to ensure the health and safety of the public by limiting human contact that could spread the COVID-19 virus, the Council Chambers will not be open for the meeting. Commission Members will be participating remotely and will not be physically present in the Council Chambers.

To maximize public safety while still maintaining transparency and public access, members of the public can observe the meeting via Zoom in one of the three methods below.

Mobility and Transportation Infrastructure Commission

Zoom Meeting Information Meeting ID: 894 2745 6783 Passcode: 441109

- 1. Go to the Zoom website, https://zoom.us/join and enter the Zoom Meeting information accordingly; or
- 3. You may listen to the meeting by calling: +1-669-900-6833 and entering the Zoom Meeting ID and Passcode when prompted to do so.

For additional Zoom assistance with telephone audio, you may find your local number at: https://us02web.zoom.us/u/ky9n7bhtz

**IMPORTANT NOTE**: Members of the public may access the meeting to observe the meeting's proceedings; however, at this time, there is no live, real-time participation by members of the public.

#### PUBLIC COMMENT

If you would like to comment on an agenda item, members of the public may submit their comments in writing for consideration, by emailing comments or questions to: <a href="mailto:mticpubliccomments@southpasadenaca.gov">mticpubliccomments@southpasadenaca.gov</a>. Public Comments must be received by 12:00 p.m., April 20, 2021 to ensure adequate time to compile and post. Public Comment portion of the email is limited to 250 words. Please make sure to indicate: 1) your name; 2) what agenda item you are submitting public comment on, or if it is a general public comment; and/or 3) clearly state if you wish for your comment to be read during the meeting.

**CALL TO ORDER:** Commissioner Abelson

**ROLL CALL:** Commissioners: Lawrence Abelson, Eric Dunlap, John

Fisher, Kimberley Hughes, and Donson Liu

**CITY COUNCIL LIAISON:** Councilmember Jon Primuth

**STAFF PRESENT:** Garrett Crawford, Acting Deputy Director of Public Works,

and Leaonna DeWitt, Public Works Assistant

**PLEDGE OF ALLEGIANCE:** Commissioner Donson Liu

#### PUBLIC COMMENT AND SUGGESTIONS

1. Public Comment – General

#### **ACTION ITEMS**

- 2. Minutes of the Regular Mobility and Transportation Infrastructure Commission on March 16, 2021
- 3. Proposed Stop Signs on Meridian Avenue at Oak Street, Pine Street and Maple Street

#### **COMMISSION LED DISCUSSION**

- 4. SR 710 Mobility Improvement Projects Ad Hoc Committee
- 5. COVID-19 Ad Hoc Committee Metro Open Streets Grant
- 6. Discussion of Local Return Measure M Projects (staff to provide update)
- 7. Fremont Avenue Projects

#### **COMMUNICATIONS**

- 8. City Council Liaison Communications
- 9. Commissioner Communications
- 10. Staff Liaison Communications Rogan Fund Project Update

#### **ADJOURNMENT**

# FUTURE MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION MEETINGS

May 18, 2021	TBD	6:30 p.m.
June 15, 2021	TBD	6:30 p.m.

#### PUBLIC ACCESS TO AGENDA DOCUMENTS AND BROADCASTING OF MEETINGS

Commission Meeting agenda packets are available online at the City website: <a href="https://www.southpasadenaca.gov/government/boards-commissions/mobility-and-transportation-infrastructure-commission">https://www.southpasadenaca.gov/government/boards-commissions/mobility-and-transportation-infrastructure-commission</a>

#### **ACCOMMODATIONS**

The City of South Pasadena wishes to make all of its public meetings accessible to the public. If special assistance is needed to participate in this meeting, please contact the City Clerk's Division at (626) 403-7230. Upon request, this agenda will be made available in appropriate alternative formats to persons with disabilities. Notification at least 48 hours prior to the meeting will assist staff in assuring that reasonable arrangements can be made to provide accessibility to the meeting (28 CFR 35.102-35.104 ADA Title II).

I declare under penalty of perjury that I posted this notice of agenda on the bulletin board in the courtyard of City Hall at 1414 Mission Street, South Pasadena, CA 91030, and on the City's website as required by law.

4/14/21	/s/
Date	Leaonna DeWitt
	Public Works Assistant

# ITEM 2

Minutes of the Regular Mobility and Transportation Infrastructure Commission – March 16, 2021

# TUESDAY, MARCH 16, 2021 MINUTES OF THE CITY OF SOUTH PASADENA REGULAR MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION

#### **CALL TO ORDER**

The Regular Meeting of the Mobility and Transportation Infrastructure Commission was called to order by Commissioner Abelson on March 16, 2021, at 6:33 p.m. The meeting was held in a virtual setting, via Zoom.

**ROLL CALL:** Leaonna DeWitt, Public Works Assistant

PRESENT: Commissioner Abelson, Commissioner Dunlap, Commissioner Fisher, Commissioner

Hughes, Commissioner Liu and Mayor Mahmud.

**COUNCIL LIAISON:** Councilmember Jon Primuth

**ABSENT:** 

STAFF PRESENT: Shahid Abbas, Public Works Director, Garrett Crawford, Acting Deputy Public Works

Director and Leaonna DeWitt, Public Works Assistant

#### PLEDGE OF ALLEGIANCE

Commissioner Dunlap led the pledge of allegiance.

#### **PUBLIC COMMENT**

#### 1. Public Comment

- 1. Ann Rector expressed concern with the traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She mentioned illegal trucks and requested a traffic study be completed.
- 2. Sarah Aguilar expressed concern with the traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She referenced two accidents and requested a traffic study be completed.
- 3. Caroline Howell expressed concern about speeding and traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She has requested a traffic study be completed.
- 4. Victoria Eaton expressed concern with traffic on Orange Grove Avenue between Columbia St. and the 110 Freeway. She requested a traffic study be completed.
- 5. Julian Cardenas expressed concern regarding speeding and dangerous activity on Orange Grove Avenue and believes improved traffic safety measures will decrease the conditions on Orange Grove Avenue.
- 6. Frank Cardenas expressed concern regarding dangerous traffic on Orange Grove Avenue and requested a comprehensive speed-reduction measures and redesign of Orange Grove Avenue.

#### **PRESENTATION**

#### 2. Re-appropriation of Metro Open Streets Grant

Wes Reutimann, Active San Gabriel Valley, gave a brief presentation on this item. Because of the pandemic, the plan for the "Mission to Mission" and ArroyoFest like events for 2020 were cancelled. There had been funding allocated to the City to support the event, which would retained at the City's request.

A defined scope of work will need to be completed before the proposal goes to the City Council for review.

Discussion ensued regarding the funding, as well as partnering with other cities, and community programs,

#### **ACTION ITEMS**

**3.** Minutes of the Regular Mobility and Transportation Infrastructure Commission on February 16, 2021 - Minutes approved as amended. (Hughes, Fisher; 5-0)

#### **DISCUSSION ITEMS**

#### 4. Preferential Parking Policy

Acting Deputy Director Crawford gave a brief overview of this item. Commissioner Liu summarized the City of Pasadena's preferential parking program.

PWD Shahid Abass requested that the Commission discuss this item and staff would bring back a more comprehensive policy for review.

Discussion ensued regarding the existing parking districts, limited areas of the City. There was discussion about if the areas should be expanded and that it was key to maintain a balance.

The Commissioners agreed to move forward with the development of some criteria for a parking district. Staff will do some additional research in regards to if there is an existing or past policy and work with Commissioners suggestions/recommendations. After the research is completed, the staff will bring the issue will be placed as a future commission agenda, as an action item-preferential parking policy.

#### **COMMISSION LED DISCUSSIONS**

#### 5. SR 710 Mobility Improvement Projects Ad Hoc Committee

No update. Commissioner Abelson is supporting the development of a draft RFP and scope of work for a study of the SR-110 and Fair Oaks interchange. The planned studies would be used to support the initial environmental study.

#### 6. COVID-19 Ad Hoc Committee

Commissioner Liu reported that there had been meetings with the former commissioners that were on the COVID-19 Ad Hoc Committee. He also spoke with the CEO Laurie Wheeler about the business community. There is interest in weight lining signage and moving forward this will be a safer configuration for bicyclists and pedestrians. The plan is to engage the business community and city outreach to local businesses. Areas of focus will include: 1) collect their experience working with the city 2) experience with outdoor dining aspect and explore long term configurations. 3) Explore installation of parklets. 4) Identify public parking that could become a parklet. 5) Restaurants that are dining in their parking lots – small reduction or reallocation of parking can help local businesses and economy. Suggestion: Staff engage with Arroyo Fest Fund.

#### 7. Ramona Avenue Neighborhood Traffic Management Plan

Commissioner Abelson and Vice Chair Fisher took a tour of the location. The group also said that when the high school begins classes on campus in April that the situation can be evaluated and solutions considered.

Fisher surveyed the high school and holy family. What was viewed was loading on Rollin St. and is not allowed on Fremont Avenue (red curb in front). Traffic entering Holy Family school 7:30-8:10 and traffic queues on Oak St. and then enter the parking lot. Load students and exit from the Rollin street gate. One key to address the issue is looking at the drop areas and circulation and vehicular routes to the school.

#### **Public Comment**

1. Craig Erickson expressed concern regarding the traffic and safety issues on Ramona Avenue. He suggested to stagger the start times and take away the Holy Family drop off.

#### 8. Discussion of Local Return Measure M Projects for FY 2022

Commissioner Abelson gave a background information on this item. Discussion ensued regarding projects, was a

Councilmember Primuth reported that funds have not yet been identified to match the existing Rogan Funds. The Commission agreed that the Measure M funds \$1.7 million allocated to the City should not be used as a match to the Rogan funds.

The Commission agreed to go back to the original project list for consideration of use of the Measure M funds.

#### **COMMUNICATIONS**

#### 9. City Council Liaison Communications

Council Liaison Primuth commented that the FY 20-21 Budget will be presented at tomorrow night's City Council meeting.

#### 10. Commissioner Communications

Commissioner Dunlap commented that the drive through food distribution set-up at Holy Family partnership with Barber's office is very well organized.

Commissioner Hughes thank everyone for the voting on the UUT and Measure A, which passed. The funding really helped the city weather the pandemic.

Commissioner Abelson commented that it would be helpful if the commission could receive accident data, as it would help to identify possible troubled traffic locations. He also commented that he was traveling on Oak St. and it was very heartwarming to see the kids walking to Marengo Elementary. It might be helpful if when the City Council take action on projects or talk about presenting an issue to the MTIC, that the commission can be made aware when this happens. It could then generate an agenda item.

#### 11. Staff Liaison Communications

Acting Deputy Director Crawford advertised the Dedication Tree Program.

**ADJOURNMENT**: Meeting adjourned at 10:07 p.m.

I HEREBY CERTIFY that the foregoing minutes were adopted by the Mobility and Transportation Infrastructure Commission of the City of South Pasadena at a meeting held on March 16, 2021.

Larry Abelson, Chair	



## **PUBLIC COMMENT**

# MOBILITY AND TRANSPORTATION INFRASTRUCTURE COMMISSION MEETING

# March 16, 2021

Item			
No.	Name	Document	Date Received
GC	Ann Rector	E-mail Public Comment	3/06/2021
GC	Sarah Aguilar	E-mail Public Comment	3/07/2021
GC	Caroline Howell	E-mail Public Comment	3/08/2021
GC	Victoria Eaton	E-mail Public Comment	3/09/2021
GC	Julian Cardenas	E-mail Public Comment	3/16/2021
GC	Frank Cardenas	E-mail Public Comment	3/16/2021
Item 7	Craig Erickson	E-mail Public Comment	3/16/2021

From: Ann Rector

Sent: Saturday, March 6, 2021 4:17 PM

To: MTIC Public Comments

Subject: March 16, 2021 MTIC - PUBLIC COMMENT

Follow Up Flag: Follow up Flag Status: Flagged

**CAUTION:** This email originated from outside of the City of South Pasadena. Do not click links or open attachments unless you recognize the sender and know the content is safe.

My name is Ann Rector. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 217 Orange Grove Ave. in South Pasadena. My family has lived on this property since 1960 or over 60 years. I am commenting this evening because of the dangerous traffic on Orange Grove Ave. between Columbia St. and the 110 Freeway. This approximate one-quarter mile of Orange Grove Ave. has a long history of accidents, reckless driving, property damage (both City and Private), and illegal freight trucking. (North and Southbound)

Due to the ongoing, chronic safety hazards, including two recent horrible traffic accidents on Orange Grove Ave, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of the traffic.

Thank you - Ann Rector

From: Sarah Aguilar

Sent: Sunday, March 7, 2021 1:31 PM

To: MTIC Public Comments

Subject: Sarah Rector Aguilar aguilar.sarahrector@gmail.com

Follow Up Flag: Follow up Flag Status: Flagged

**CAUTION:** This email originated from outside of the City of South Pasadena. Do not click links or open attachments unless you recognize the sender and know the content is safe.

My name is Sarah Rector Aguilar. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 301 Orange Grove Avenue in South Pasadena. My family has lived on this property since 1960 or over the 60 years, I am commenting this evening because of the dangerous traffic on Orange Grove Avenue between Columbia Street and the 110 Freeway. This approximate one-quarter mile of Orange Grove Avenue has a long documented history of car accidents. In fact, not only have two street lights, directly in front of my house, been taken out by car accidents, but my irrigation system next to those street lights received major damage.

Due to the ongoing chronic safety hazards, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of traffic.

Thank you - Sarah Rector Aguilar

From: Caroline Howell

Sent: Monday, March 8, 2021 7:30 AM

To: MTIC Public Comments

Cc: Nick Howell

**Subject:** Public comment for MTIC

Follow Up Flag: Follow up Flag Status: Flagged

CAUTION: This email originated from outside of the City of South Pasadena. Do not click links or open attachments unless you recognize the sender and know the content is safe.

I am Caroline Howell and would like this General Public Comment read aloud at your upcoming meeting:

We own a home at 300 Orange Grove Avenue (corner of Oliver Street) where we have lived for 4 years. We are very concerned about the speeding, reckless driving and dangerous traffic on Orange Grove Avenue between Columbia and the 110 Freeway. We have witnessed numerous accidents and an untold amount of speeding in this corridor next to our home. Last month, our 17-year-old son heard a horrific accident in the middle of the night and ran out to call 9-1-1, and witnessed a car totaled with 4 passengers. Please consider a traffic study to evaluate what can be done to make this a safer area.

Thank you, Caroline & Nick Howell From: Victoria Eaton

Sent: Tuesday, March 9, 2021 4:06 PM

To: MTIC Public Comments

**Subject:** Drive like your kids live here

Follow Up Flag: Follow up Flag Status: Flagged

**CAUTION:** This email originated from outside of the City of South Pasadena. Do not click links or open attachments unless you recognize the sender and know the content is safe.

My name is Victoria Eaton. This email is for General Public Comment. I wish for my email public comment to be read out loud during the meeting.

I own a home at 411Prospect Circle in South Pasadena. My family has lived here for 8 years. I am commenting this evening because of the dangerous traffic on Orange Grove Ave. between Columbia St. and the 110 Freeway and on Meridian Ave . This one-quarter mile of Orange Grove Ave. has a long documented history of accidents, reckless driving, property damage (both City and Private) as well as the high speeds on Meridian Avenue.

Due to the ongoing, chronic safety hazards, including two recent horrible traffic accidents on Orange Grove Ave, I am requesting that a Traffic Study be completed. Following the Traffic Study, mitigation strategies can be implemented immediately. Something must be done to slow down the speed of the traffic.

Thank you,

Victoria Eaton

From: Julian Cardenas

**Sent:** Tuesday, March 16, 2021 10:29 AM

To: MTIC Public Comments

**Subject:** 3/16 MTIC Meeting - Resident Public Comment

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# Follow up to Frank Cardenas's statement - I would like my general public comment to be read into the record during the meeting:

The majority of the time that I walk or drive by Orange Grove Avenue, I see speeding, dangerous merging, street racing, or near-collisions. Most recently, I heard and responded to a serious traffic collision on southbound Orange Grove near Oliver Street, not 200 yards from our home. When I arrived on scene (before PD and Fire), I found a young woman bleeding from a large gaping hole in her skull and who had traumatic deformities to her legs. She was partially ejected from the vehicle, disoriented, crying, and begging to see her mother. Another young woman was lying inside of nearby bushes with other injuries. The car they were riding in had crashed into a rock wall, demolished a light pole, and injured a tree before coming to a rest after careening off the Avenue. As an emergency medicine student, I firmly believe that improved traffic safety measures, diligent supervision by our Police Department, and attention by City Administration will decrease the amount of human pain and suffering caused by the dangerous conditions on Orange Grove Avenue that have been allowed to persist for decades on end.

# With appreciation for your service, Julian Cardenas

Julian C. Cardenas, EMT
Registered Emergency Medical Technician
Emergency Medical Services Major
University of New Mexico
UNM ID 101901596



"Each of us defines all of us"

From: Frank Cardenas

**Sent:** Tuesday, March 16, 2021 10:58 AM

To: MTIC Public Comments

**Subject:** General Public Comment - Mobility and Transportation

Infrastructure Commission

**CAUTION:** This email originated from outside of the City of South Pasadena. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Honorable Members of the Mobile and Transportation Infrastructure Commission:

My name is Frank Cardenas. My family has lived at the corner of Prospect Drive and Prospect Circle for over 20 years. It's the only home our three children have ever known. We love our neighborhood and we love our town. To live in our neighborhood, however, is to live with the reality that at any moment the regular, dangerous driving behaviors on Orange Grove Avenue - particularly of southbound motorists - can result in tragedy. Of the many crashes on Orange Grove between Mission and Columbia, perhaps the most gruesome occurred about four weeks ago when our nineteen-year old son, a trained Emergency Medical Technician, found himself racing from our home to respond to a car crash on Orange Grove just south of Columbia, quite apparently caused by speeding.

Our son is submitting as Public Comment to your commission his description of the horrific human tragedy that he encountered as he assisted two women who had been thrown from the vehicle. This latest tragedy is but the most recent indication that the traffic calming measure of a redesigned median about 18 years ago, and the installation of two new stop signs in the Prospect-Meridian Neighborhood about ten years ago, are no longer adequate. The situation on and around Orange Grove has gotten worse and new measures are needed. The time has come to investigate, with the City of Pasadena, new, comprehensive speed-reduction measures, including a possible redesign of Orange Grove. Thank you.

Trank Cardenas			

#### Frank C. Cardenas

Frank Cardenas

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From: Craig Erickson

**Sent:** Tuesday, March 16, 2021 10:19 AM

To: MTIC Public Comments

**Subject:** Ramona Avenue Neighborhood Traffic Management Plan Ad Hoc

Committee-Public Comment

Attachments: HF Traffic 1.jpg; HF Traffic 4.jpg; HF Traffic 3.jpg; HF Traffic 2.jpg

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#### Craig Erickson

Ramona Avenue Neighborhood Traffic Management Plan Ad Hoc Committee Please read the comment during the meeting.

I live at 1545 Ramona Ave, on the corner of Ramona and Oak. I watch every morning as the cars for Holy Family line up down Ramona and cause traffic and safety issues in the neighborhood. I have reviewed the November 2019 Traffic Management Plan. While it does suggest some reasonable solutions. It does nothing to address the root of the problem. None of these solutions will reduce the traffic flow. The root of the problem is all the traffic from the Holy Family drop off. There also needs to be better enforcement of drop off at the High School.

I believe that the simplest and most cost effective solution is to stagger the start times and take away the Holy Family drop off, especially since 90% of the students are from outside South Pas. They should utilize the 75 spots in their other lot. Their reason for not doing this is the students having to cross Fremont. Students at every other school in the district cross busy streets everyday. Not only is there a traffic light, they can move the nice lady who watches the driveway to the Fremont/Oak intersection to act as a crossing guard.

While they are very concerned with the safety of their students they don't seem to have the same concern for the other students and residents of the neighborhood. The parents have a total disregard for the neighborhood and traffic laws. They are constantly making u turns and stopping in the crosswalks both on Ramona and Oak. The traffic back up also causes other drivers to lose patience and not make the safest driving choices.

Thank you.

Craig Erickson

# ITEM 3 Proposed Stop Signs on Meridian Avenue at Oak Street, Pine Street and Maple Street



# Mobility & Transportation Infrastructure Commission Agenda Report

ITEM NO. 3

**DATE:** April 20, 2021

**FROM:** Garrett Crawford, Acting Deputy Public Works Director

SUBJECT: Update on the Multi-Way Stop Signs Study for Meridian Avenue at

Oak Street, Pine Street, and Maple Street

#### Recommendation

It is recommended that the Mobility and Transportation Infrastructure Commission (MTIC):

- Receive and file the Multi-Way Stop Sign Analysis Update, and make a recommendation to the City Council for traffic controls on Meridian Avenue at Oak Street, Pine Street, and Maple Street, or
- Provide guidance to the staff on how to proceed further on this report.

#### **Background**

In response to the request by the residents of Meridian Avenue, W.G. Zimmerman Engineering, Inc. prepared a stop sign analysis for Meridian Avenue at Oak Street, Pine Street, and Maple Street (Engineer's Study) on May 6, 2020 (Attachment 1). The study concluded that the subject intersections do not meet the California Manual of Uniform Traffic Control Devices (CAMUTCD) criteria for Multi-Way Stop Application in Section SB.07.

On August 5, 2020, staff presented the Engineer's Study's findings to the City Council. Subsequently, at October 7, 2020, Council Meeting, Council directed staff to conduct a new traffic study at the above intersections.

Recently in March of this year, the Interwest Consulting Group conducted a Peer Review of the original Engineer's Study (Attachment 2). Their review consisted of evaluating field and site conditions, vehicular and non-vehicular traffic operations on Meridian Avenue, and side streets, including turning movements at the three locations. The review validated the findings of W.G. Zimmerman Engineering stop sign analysis.

#### **Discussion**

Subsequent to the Peer Review, the City consulted with Rock E. Miller & Associates (Miller Report), who prepared a report, "Review and Evaluate Traffic Control needs on Meridian Avenue," dated April 13, 2021 (Attachment 3). The report identifies alternative criteria in CAMUTCD that may be considered for installing multi-way stop signs on neighborhood local residential streets when if specific safety concerns exist. The MUTCD Section 2B.07 states as follows:

"Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."

This section of CAMUTCD intends to apply an alternative criterion as a safety measure, but it may not support its application when there are no identifiable safety concerns. Following are the major conclusions of the Miller's Report:

- Oak Street and Meridian Avenue: Based on the unique intersection geometrics, the marked school crossing at the south leg, and the street usage further to the east. The report recommends a multi-way stop sign control at this location.
- <u>Maple Street and Meridian Avenue</u>: The report cites higher traffic volumes and restricted sight distance as a factor for installation of a multi-way stop sign control while noting that sight distance is good and could further improve by painting additional red curb, which would result in a safer and better operation of the intersection. Therefore, staff does not recommend a multi-way stop sign control at this location.
- <u>Pine Street and Meridian Avenue</u>: The report finds lower traffic volumes compared to the other locations with the fewest distinguished factors for installing an all-way stop sign control. The report also recommends an additional red curb to improve sight distance. Given these factors, staff does not recommend a multi-way stop sign control at this location.

The report also suggests that if the City chose to deviate from CAMUTCD warrants and install an all-way stop sign, it must consider how it might apply to other intersections in the City. This will set a precedent, which may lead to the installation of many stop signs at intersections with similar characteristics. Therefore the report recommends adopting new guidelines for installing a multi-way stop controls on local residential streets. The report provides no additional engineering data on existing conditions.

#### **Fiscal Impact**

The cost of installing the stop signs and stop ahead signs is estimated to be \$2,000. If approved, Public Works will use its exiting operating funds to manufacture and install the signs.

#### **Public Notification of Agenda Item**

The public was made aware that this item was to be considered this evening by virtue of its inclusion on the legally publicly noticed agenda, posting of the same agenda, and reports on the City's website and/or notice in the *South Pasadena Review* and/or the *Pasadena Star-News*.

#### Attachments:

- 1. Engineer's Study
- 2. Peer Review Interwest
- 3. Miller Report

## **ATTACHMENT 1**

Engineer's Study

May 6, 2020

#### **MEMORANDUM**

**Shahid Abbas Director of Public Works** City of South Pasadena 1414 Mission Street South Pasadena, CA 91030

Meridian Avenue at Oak Street, Pine Street, and Maple Street Stop Sign Analysis:

Dear Mr. Abbas:

The purpose of this memorandum is to present the findings of a Stop Sign Analysis related to the proposed installation of a Stop Sign at three (3) intersections along Meridian Avenue. The three intersections are at Oak Street, Pine Street, and Maple Street. An aerial map of the locations is provided as Exhibit A.

The stop sign analysis was based upon the Manual on Uniform Traffic Control Devices, 2009 Edition, produced by the Federal Highway Administration (FHWA) which was amended in 2014 by the California Department of Transportation and also considered street geometry, sight distance, safety, and traffic patterns.

#### California Manual of Uniform Traffic Control and Devices (CA MUTCD) Criteria:

The California Manual of Uniform Traffic Control Devices, 2014 Edition (CA MUTCD) provides guidance and criteria for Multi-Way STOP Applications in Section 2B.07. A stop sign should not be installed unless one or more of these criteria is met. Section 2B.07 of the CA MUTCD recommends that engineering judgment be used in the evaluation of the criteria to ensure that a stop sign will improve the overall safety and/or operation of the intersection. Typically, multi-way stop control is used where the volume of traffic on the minor road is approximately equal to the major road.

As per Section 2B.07 of the CA MUTCD, the decision to install a multi-way stop should be based on an engineering study and the following criteria should be considered for a multi-way stop sign installation:

- A. Where traffic control signals are justified, the multi-way stop is an interim measure that can be installed quickly to control traffic while arrangements are being made for the installation of the traffic control signal.
- B. Five or more reported crashes in a 12-month period that are susceptible to correction by a multi-way stop installation. Such crashes include right-turn and left-turn collisions as well as right-angle collisions.
- C. Minimum volumes:



Phone: 714-799-1700 Fax: 714-333-4712

- 1. The vehicular volume entering the intersection from the major street approaches (total of both approaches) averages at least 300 vehicles per hour for any 8 hours of an average day; and
- 2. The combined vehicular, pedestrian, and bicycle volume entering the intersection from the minor street approaches (total of both approaches) averages at least 200 units per hour for the same 8 hours, with an average delay to minor-street vehicular traffic of at least 30 seconds per vehicle during the highest hour; but
- 3. If the 85th-percentile approach speed of the major-street traffic exceeds 40 mph, the minimum vehicular volume warrants are 70 percent of the values provided in Items 1 and 2.
- D. Where no single criterion is satisfied, but where Criteria B, C.1, and, C.2 are all satisfied to 80 percent of the minimum values. Criterion C.3 is excluded from this condition.

#### Methodology:

The CAMUTCD provides guidance for stop sign applications for traffic volume, sight distance, and accident history. On Wednesday, January 22, 2020, National Data & Surveying Services (NDS) collected peak hour traffic data at each of the intersections (Oak Street, Pine Street, and Maple Street) along with traffic volumes just north of the Meridian Avenue and Oak Street intersection.

Intersection vehicular volumes, major street volumes, and accident data were reviewed for each of the intersections. After further review, none of the intersections satisfy the conditions presented in points A-D of Section 2B.07 Multi-Way STOP Applications of the CA MUTCD.

#### **Conclusions:**

#### **Meridian Avenue and Oak Street**

The intersection of Meridian Avenue and Oak Street is a t-intersection as shown on the attached aerial photo. Approximately 150 feet north of Oak Street, Meridian Avenue is approximately 40 feet wide and then transitions to 35 feet. Prior to the transition, parking is allowed on both sides of Meridian north of the intersection, south of the intersection parking is allowed on both sides except for the easterly side of the street where there is 97 feet of red curb to prevent parked cars from blocking the line of sight for vehicles making a right turn onto Meridian from Oak. Along the west side of the intersection there is a driveway that serves a single-family residence. Oak Street is 30 feet wide which allows for parking along both sides of the street. Westbound Oak currently has a stop sign, while the north and southbound legs Meridian Avenue do not. The southerly leg of the intersection has a crosswalk with in-pavement lighting along with the appropriate signage.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there was only one (1) accident at the intersection which does not satisfy the requirement of five (5) accidents within a 12-month period. The summary of the accident(s) is presented in the Table 1 below:



Phone: 714-799-1700 Fax: 714-333-4712

Table 1: Meridian	Table 1: Meridian Avenue and Oak Street 12-Month Accident History											
Date of Collision	Date of Collision Type of Collision Collision Severity Motor Vehicle Involved With											
9/22/2019	Broadside	Injury (Complaint of Pain)	Bicycle									

Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Oak Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Oak Street is summarized in Table 2 below.

Table 2: Vehicles, Pedestrians, and Bicycles Entering from Oak Street During the Peak Hour(s)											
Intersection	AM Pe 7:30AM – 8		Noon P 11:30AM – 1		PM Peak 5:00PM – 6:00PM						
	Vehicles	114	Vehicles	30	Vehicles	49					
Meridian Avenue	Pedestrian	36	Pedestrian	14	Pedestrian	31					
and Oak Street	Bicycles	0	0 Bicycles 0 Bicycles		0						
	AM Total	150	Noon Total	44	PM Total	80					

Based on these numbers, this intersection does not satisfy the minimum of 200 units vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.

#### **Meridian Avenue and Pine Street**

The intersection of Meridian Avenue and Pine Street is a t-intersection. At this intersection, Meridian Avenue is 35 feet wide which allows for parking on both sides of Meridian north and south of Pine. Along the westerly side of Meridian there is an apartment complex. Pine Street is 45 feet wide, has a downward slope which meets Meridian Avenue, and parking is allowed on both sides of Pine Street. The westbound leg of Pine Street has a stop sign, while the north and southbound legs of Meridian Avenue does not.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there was only one (1) accident at the Meridian Avenue and Pine Street intersection, which does not satisfy the requirement of five (5) accidents within a 12-month period.

Table 3: Meridian Avenue and Pine Street 12-Month Accident History											
Date of Collision	Date of Collision Type of Collision Collision Severity Motor Vehicle Involved With										
01/17/2020	Rear End	Injury (Complaint of Pain)	Other Motor Vehicle								



Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Pine Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Pine Street is summarized in Table 4 below.

Table 4: Vehicles, Pedestrians, and Bicycles Entering from Pine Street During the Peak Hour(s)										
Intersection	AM Pe	ak	Noon P	eak	PM	Peak				
	7:30AM – 8	3:30AM	11:30AM – :	12:30PM	5:00PM	– 6:00PM				
	Vehicles	77	Vehicles	28	Vehicles	51				
Meridian Avenue	Pedestrian	17	Pedestrian	1	Pedestrian	15				
and Pine Street	Bicycles	0	Bicycles 0		Bicycles	0				
	AM Total	94	Noon Total	29	PM Total	66				

Based on these numbers, this intersection does not satisfy the minimum of 200 units vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.

#### **Meridian Avenue and Maple Street**

The Meridian Avenue and Maple Street intersection is a t-intersection located south of the Pine Street intersection. Meridian Avenue is 36 feet wide while Maple Street is 48 feet wide which allows parking on both sides of the street. Maple Street slopes down to meet Meridian Avenue. The area surrounding the intersection consists mainly of single-family residences. On the north leg of the intersection there is a crosswalk. Maple Street is stop controlled while Meridian Avenue is not.

Accident history obtained from SWITRS from January 31, 2019 – January 31, 2020 shows that there were no accidents at the Meridian Avenue and Maple Street intersection, which does not satisfy the requirement of five (5) accidents within a 12-month period.

Traffic volumes including pedestrian and bicycle volumes were analyzed for the intersection. Based on the data collected by NDS, the average daily volume (ADT) of Meridian Avenue is 9,620 vehicles per day where 4,767 vehicles head north and 4,853 vehicles go south. The data along Meridian Avenue shows that the vehicular volume from Meridian does average at least 300 vehicles per hour for any 8 hours of an average day. Although an ADT count was not conducted on Maple Street, the peak hours of the intersection was reviewed. Typically, the peak hour of an intersection experiences the heaviest amount of traffic during the day. The peak hour data which includes vehicles, pedestrians, and bicycles was tabulated for Maple Street and present in Table 5 below.



Table 5: Vehicles, Pedestrians, and Bicycles Entering from Maple Street During the Peak Hour(s)											
Intersection	AM Pe 7:15AM – 8		Noon P 11:30AM – 1			1 Peak 1 – 6:00PM					
	Vehicles	251	Vehicles	88	Vehicles	257					
Meridian Avenue	Pedestrian	27	Pedestrian	13	Pedestrian	46					
and Maple Street	Bicycles	2	2 Bicycles 2 Bicycles		Bicycles	1					
	AM Total	280	Noon Total	103	PM Total	304					

Although, the AM and PM peak reaches the required 200 unit threshold, the noon peak does not which indicates that during the non-peak hours the 200 unit minimum threshold is probably not met. Based on the data, any other 5 hours of the day of this intersection does not reach the minimum of 200 units needed to satisfy the minimum vehicular volume for a minor street. Therefore, this intersection does not meet the requirements for minimum volumes for a multi-way stop.



#### **Recommendations:**

Meridian Avenue and Oak Street: It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install horizontal alignment warning signs (W1-4) with a 25 MPH speed advisory sign (W13-1P) along Meridian Avenue to help discourage speeding.

**Meridian Avenue and Pine Street:** It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install horizontal alignment warning signs (W1-4) with a 25 MPH speed advisory sign (W13-1P) along Meridian Avenue to help discourage speeding along the corridor.

**Meridian Avenue and Maple Street:** It is not recommended to install a STOP sign on the northbound and southbound leg of Meridian Avenue. It is recommended to continue to monitor the intersection for excessive speeds, pedestrians, and other traffic conditions. It is also recommended to install a 25 MPH speed advisory sign (W13-1P) on the existing W1-5 sign on the northeast corner of the intersection to help discourage speeding along the corridor.

The existing crosswalk on the north leg of the intersection currently does not have adequate access for a pedestrian to enter the crosswalk. At the westerly side of the crosswalk, the crosswalk ends at the curb which forces the pedestrian to step up onto the sidewalk. On the easterly end of the crosswalk, the crosswalk ends at the north wing of the existing curb ramp. To enter the crosswalk, the pedestrian must step down into the crosswalk. This does not meet the minimum criteria for ADA access. Pedestrian data was collected during the AM, Noon, and PM peak hours to determine how many pedestrians use the crosswalk. During the peak hours there were 4 pedestrians in the morning, 4 at noon, and 4 during the PM peak. Based on the numbers and existing conditions, it is recommended to remove the crosswalk based on language provided in Section 21950.5 of the California Vehicle Code (CVC).

If you have any questions regarding this memo, please feel free to contact me at 714-799-1700 x 100.

Sincerely,

W.G. Zimmerman Engineering, Inc.

Bill Zimmerman, PE, TE, PT DE

President



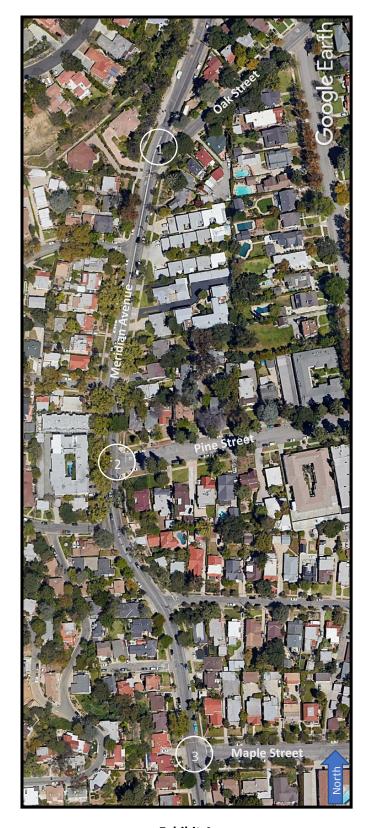


Exhibit A Aerial Photo

W.G. Zimmerman Engineering, Inc. 17011 Beach Boulevard, Suite 1240 Huntington Beach, CA 92647 Phone: 714-799-1700 Fax: 714-333-4712

WGZE

**DATA** 



Phone: 714-799-1700 Fax: 714-333-4712

#### Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020 City: South Pasadena
Project #: CA20\_5029\_002n

North Bound

North Bound														
Time	#1	# 2	# 3	# 4	# 5	#6	#7	#8	#9	# 10	# 11	# 12	# 13	Total
0:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1
0:15 0:30	0	5 3	0	0	0 1	0	0	0	0	0	0	0	0	5 4
0:45	0	1	0	ő	ō	0	ō	Ö	0	0	0	0	0	1
1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
1:15 1:30	0	2	0 1	0	0 1	0	0	0	0	0	0	0	0	2
1:30	0	3	1	0	0	0	0	0	0	0	0	0	0	4
2:00	0	0	0	0	ō	0	0	0	0	0	0	0	0	0
2:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:45 3:00	0	0	0 1	0	0	0	0	0	0	0	0	0	0	0 1
3:15	0	1	0	0	0	0	0	0	0	0	0	0	0	1
3:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00	0	1 0	1 0	0	0	0	0	0	0	0	0	0	0	2 0
4:15 4:30	0	5	0	ő	ő	0	0	0	0	0	0	0	0	5
4:45	0	6	2	ő	ő	0	ő	Ö	0	0	0	0	0	8
5:00	0	6	2	0	0	0	0	0	0	0	0	0	0	8
5:15	0	11	1	0	0	0	0	0	0	0	0	0	0	12
5:30 5:45	0	13 13	3	0	0	0	0	0	0	0	0	0	0	16 16
6:00	0	26	4	0	0	0	0	0	0	0	0	0	0	30
6:15	0	32	6	0	0	0	0	0	0	0	0	0	0	38
6:30	0	36	9	0	0	0	0	0	0	0	0	0	0	45
6:45 7:00	0	55 70	11 8	0	1 1	0	0	0	0	0	0	0	0	67 79
7:00 7:15	0	125	15	0	0	0	0	0	0	0	0	0	0	140
7:30	0	129	22	ő	1	0	0	0	0	0	0	0	0	152
7:45	0	137	24	1	3	0	0	0	0	0	0	0	0	165
8:00 9:15	0	100	13 9	0	1 0	0	0	0	0	0	0	0	0	114
8:15 8:30	0	78 98	9 17	0	2	0	0	0	0	0	0	0	0	87 118
8:45	0	85	17	0	0	0	0	0	0	0	0	0	0	102
9:00	0	83	5	0	1	0	0	0	0	0	0	0	0	89
9:15	0	60	11	0	0	0	0	0	0	0	0	0	0	71
9:30 9:45	0	54 55	14 19	0	1 2	0	0	0	0	0	0	0	0	69 76
10:00	0	39	15	0	0	0	0	0	0	0	0	0	0	54
10:15	0	47	7	0	0	0	0	0	0	0	0	0	0	54
10:30	0	38	8	0	0	0	0	0	0	0	0	0	0	46
10:45 11:00	1 0	49 43	9	0	3 1	0	0	0	0	0	0	0	0	62 52
11:15	0	41	11	o	1	0	0	0	0	0	0	0	0	53
11:30	0	41	10	0	0	0	0	0	0	0	0	0	0	51
11:45	0	49	11	0	0	0	0	0	0	0	0	0	0	60
12:00 PM 12:15	0	49 40	11 16	1 0	1 2	0	0	0	0	0	0	0	0	62 58
12:30	0	50	9	ő	0	0	0	0	0	0	0	0	0	59
12:45	0	46	7	Ö	3	0	0	Ö	0	Ö	Ö	0	Ö	56
13:00	1	48	8	0	1	0	0	0	0	0	0	0	0	58
13:15	0	55 56	6 7	0	0	0	0	0	0	0	0	0	0	61 65
13:30 13:45	1 0	67	9	0	1 1	0	0	0	0	0	0	0	0	77
14:00	0	63	16	0	2	0	0	0	0	0	0	0	0	81
14:15	0	64	8	0	0	0	0	0	0	0	0	0	0	72
14:30	1 0	70	13	0	1	0	0	0	0	0	0	0	0	85
14:45 15:00	1	98 90	18 17	0	0	0	0	0	0	0	0	0	0	116 109
15:15	0	59	20	0	1	0	0	0	0	0	0	0	0	80
15:30	0	55	14	0	1	0	0	0	0	0	0	0	0	70
15:45	1 0	65	12 15	0	1	0	0	0	0	0	0	0	0	79 100
16:00 16:15	0	83 84	13	0	2	0	0	0	0	0	0	0	0	100
16:30	0	76	12	ō	ó	0	ō	0	0	0	0	0	0	88
16:45	0	74	17	0	2	0	0	0	0	0	0	0	0	93
17:00	0	105	19	0	0	0	0	0	0	0	0	0	0	124
17:15 17:30	0	95 96	14 13	0	1 1	0	0	0	0	0	0	0	0	110 111
17:45	0	93	14	ő	ō	0	0	0	0	0	0	0	0	107
18:00	0	81	4	0	1	0	0	0	0	0	0	0	0	86
18:15	0	71	10	0	1	0	0	0	0	0	0	0	0	82
18:30 18:45	0	61 60	11 11	0	2 0	0	0	0	0	0	0	0	0	74 71
19:00	0	56	3	0	0	0	0	0	0	0	0	0	0	59
19:15	0	45	3	0	0	0	0	0	0	0	0	0	0	48
19:30 19:45	0	44	3	0	1 0	0	0	0	0	0	0	0	0	48
19:45 20:00	0	24 26	8 2	0	1	0	0	0	0	0	0	0	0	32 29
20:15	0	29	3	0	0	0	0	0	0	0	0	0	0	32
20:30	0	23	3	0	0	0	0	0	0	0	0	0	0	26
20:45	0	25	1	0	0	0	0	0	0	0	0	0	0	26
21:00 21:15	0	31 15	2	0	0	0	0	0	0	0	0	0	0	33 17
21:30	0	26	1	0	0	0	0	0	0	0	0	0	0	27
21:45	0	12	1	0	0	0	0	0	0	0	0	0	0	13
22:00	0	23	2	0	0	0	0	0	0	0	0	0	0	25
22:15 22:30	0	9	1 1	0	0	0	0	0	0	0	0	0	0	10 7
22:30 22:45	0	8	2	0	0	0	0	0	0	0	0	0	0	10
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
23:15	0	3	1	0	0	0	0	0	0	0	0	0	0	4
23:30	0	4	1	0	0	0	0	0	0	0	0	0	0	5
23:45 Totals	0 8	4021	684	0	0 52	0	U	U	0	0	0	0	0	4767
% of Totals	0%	84%	14%	0%	1%									100%
AA41/-1														
AM Volumes % AM	2 0%	1646 35%	298 6%	1 0%	20 0%	0	0	0	0	0	0	0	0	1967 41%
AM Peak Hour	270	5570	270	270	270									
Volume PM Volumes	6	2375	386	1	32	0	0	0	0	0	0	0		2800
% PM	0%	50%	386 8%	0%	32 1%	0	0	0	0	0	0	0	0	2800 59%
PM Peak Hour														
Volume	rectional Pe	ak Daria d		AM 7-9			NOON 12-2			PM 4-6		2"	Poal: V-I	
l Dir		All Classes	Volume	AIVI /-9	%	Volume	NOUN 12-2	%	Volume	rivi 4-6	%	Volume	Peak Volun	nes %
		, un classes	957	$\longleftrightarrow$	20%	496	$\longleftrightarrow$	10%	834	$\longleftrightarrow$	17%	2480	←→	52%

# Classification Definitions 7 >=4-Axle Single Units 8 <=4-Axle Single Trailers 9 5-Axle Single Trailers

- Motorcycles
   Passenger Cars
   2-Axle, 4-Tire Single Units
- 4 Buses
  5 2-Axle, 6-Tire Single Units
  6 3-Axle Single Units
- 10 >=6-Axle Single Trailers 11 <=5-Axle Multi-Trailers 12 6-Axle Multi-Trailers
- 13 >=7-Axle Multi-Trailers

#### Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020 City: South Pasadena
Project #: CA20\_5029\_002s

South Bound														
Time	#1	# 2	#3	#4	# 5	#6	#7	#8	#9	# 10	# 11	# 12	# 13	Total
0:00 AM 0:15	0	4	0	0	0	0	0	0	0	0	0	0	0	4 4
0:30	0	3	1	0	0	0	0	0	0	0	0	0	0	4
0:45 1:00	0	5 2	1 0	0	0	0	0	0	0	0	0	0	0	6 2
1:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
1:30	0	2	1	0	0	0	0	0	0	0	0	0	0	3
1:45 2:00	0	1 3	0	0	0 1	0	0	0	0	0	0	0	0	1 4
2:15	0	3	1	0	ō	Ö	o	0	0	0	0	0	0	4
2:30	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:45 3:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:15	0	1	0	0	o	0	0	0	0	0	0	0	0	1
3:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:45 4:00	0	1 4	0	0	0	0	0	0	0	0	0	0	0	1 4
4:15	0	0	0	0	ő	0	0	0	0	0	0	0	0	0
4:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
4:45 5:00	0	2	1 0	0	0	0	0	0	0	0	0	0	0	3 4
5:15	0	5	1	0	0	ō	0	0	0	0	ō	0	Ō	6
5:30 5:45	0	4 5	0	0	0	0	0	0	0	0	0	0	0	4 11
6:00	0	4	2	0	0	0	0	0	0	0	0	0	0	6
6:15	0	12	1	0	0	0	0	0	0	0	0	0	0	13
6:30 6:45	0	36 46	4 8	0	0	0	0	0	0	0	0	0	0	40 54
6:45 7:00	2	60	7	0	2	0	0	0	0	0	0	0	0	71
7:15	0	62	6	1	0	1	0	0	0	0	0	0	0	70
7:30 7:45	0	87 128	23 34	0	0	0	0	0	0	0	0	0	0	110 165
7:45 8:00	1	92	27	1	1	0	0	0	0	0	0	0	0	165
8:15	0	98	22	0	2	0	0	0	0	0	0	0	0	122
8:30 8:45	0	70 59	11 15	0	1 1	0	0	0	0	0	0	0	0	82 75
9:00	0	44	10	0	1	0	0	0	0	0	0	0	0	55
9:15	0	57	9	0	0	1	0	0	0	0	0	0	0	67
9:30 9:45	0	39 50	7 16	0	0 1	0	0	0	0	0	0	0	0	46 68
10:00	1	31	7	0	3	0	0	0	0	0	0	0	0	42
10:15	0	31	8	1	2	0	0	0	0	0	0	0	0	42
10:30 10:45	0	34 36	9	0	1	0 1	0	0	0	0	0	0	0	44 48
11:00	0	33	10	0	0	0	0	0	0	0	0	0	0	43
11:15 11:30	1 1	37 47	6 15	0	0	0 1	0	0	0	0	0	0	0	44 64
11:45	0	40	3	0	0	0	0	0	0	0	0	0	0	43
12:00 PM	0	38	5	0	0	0	0	0	0	0	0	0	0	43
12:15 12:30	0	46 39	11 12	1	1 0	0	0	0	0	0	0	0	0	59 51
12:45	0	47	11	0	ő	0	0	0	0	0	0	0	0	58
13:00	0	48	8	0	0	0	0	0	0	0	0	0	0	56
13:15 13:30	0	40 46	5 12	0	2	0	0	0	0	0	0	0	0	47 58
13:45	1	44	9	0	2	0	0	0	0	0	0	0	0	56
14:00	0	48	11	0	0 4	1 0	0	0	0	0	0	0	0	60
14:15 14:30	1 0	50 56	11 18	0	0	0	0	0	0	0	0	0	0	66 74
14:45	1	69	21	0	1	0	0	0	0	0	0	0	0	92
15:00 15:15	0	85 90	15 21	0	1 1	0	0	0	0	0	0	0	0	101 112
15:30	1	89	18	0	1	0	0	0	0	0	0	0	0	109
15:45	0	78	15	0	1	1	0	0	0	0	0	0	0	95
16:00 16:15	0	91 81	24 18	0	0 1	0	0	0	0	0	0	0	0	115 102
16:30	0	80	17	ō	ō	ō	ő	0	0	ő	0	0	0	97
16:45	2	84	23	0	2	0	0	0	0	0	0	0	0	111
17:00 17:15	1 1	135 131	15 17	0	1	0	0	0	0	0	0	0	0	152 152
17:30	1	126	26	0	2	0	0	0	0	0	0	0	0	155
17:45 18:00	0	112 118	24 16	0	1	0	0	0	0	0	0	0	0	137 134
18:15	0	84	12	0	0	0	0	0	0	0	0	0	0	96
18:30	0	68	12	0	0	0	0	0	0	0	0	0	0	80
18:45 19:00	0	81 63	14 7	0	1	0	0	0	0	0	0	0	0	96 70
19:15	0	64	8	0	0	0	0	0	0	0	0	0	0	72
19:30	0	43	1	0	0	0	0	0	0	0	0	0	0	44
19:45 20:00	0	48 47	4	0	1	0	0	0	0	0	0	0	0	53 51
20:15	0	49	6	0	0	0	0	0	0	0	0	0	0	55
20:30 20:45	0	51 31	1 2	0	0	0	0	0	0	0	0	0	0	52 33
20:45	0	31	2	0	0	0	0	0	0	0	0	0	0	40
21:15	0	31	3	0	0	0	0	0	0	0	0	0	0	34
21:30 21:45	0	32 20	1 2	0	0	0	0	0	0	0	0	0	0	33 22
22:00	0	19	4	0	0	0	0	0	0	0	0	0	0	23
22:15	0	19	3	0	0	0	0	0	0	0	0	0	0	22
22:30 22:45	0	12 15	2 2	0	0	0	0	0	0	0	0	0	0	14 17
23:00	0	13	0	0	0	0	0	0	0	0	0	0	0	13
23:15	0	11	0	0	0	0	0	0	0	0	0	0	0	11
23:30 23:45	0	9 5	1 2	0	0	1	0	0	0	0	0	0	0	11 7
Totals	16	4019	754	5	51	8	3	J	Ü			3		4853
% of Totals	0%	83%	16%	0%	1%	0%								100%
AM Volumes	6	1295	278	4	25	4	0	0	0	0	0	0	0	1612
% AM AM Peak Hour	0% 6:15	27% 7:30	6% 7:30	0% 7:15	1% 10:00	0% 10:45								33% 7:30
Volume	2	405	106	2	9	2								519
PM Volumes % PM	10 0%	2724 56%	476 10%	1 0%	26 1%	4 0%	0	0	0	0	0	0	0	3241 67%
PM Peak Hour	16:45	17:00	17:15	12:00	16:45	15:30								17:00
Volume	5 rectional Pe	504 Periods	83	1 AM 7-9	8	2	NOON 12-2			PM 4-6		0"	Pools V-1	596
Jir		All Classes	Volume	AIVI /-9	%	Volume	OON 12-2	%	Volume	F IVI 4-6	%	Volume	Peak Volun	nes %
			817	<b>←→</b>	17%	428	<b>←→</b>	9%	1021	←→	21%	2587	<b>←→</b>	53%

# Classification Definitions 7 >=4-Axle Single Units 8 <=4-Axle Single Trailers 9 5-Axle Single Trailers

- Motorcycles
   Passenger Cars
   2-Axle, 4-Tire Single Units
- 4 Buses5 2-Axle, 6-Tire Single Units6 3-Axle Single Units

- 10 >=6-Axle Single Trailers 11 <=5-Axle Multi-Trailers 12 6-Axle Multi-Trailers
- 13 >=7-Axle Multi-Trailers

#### Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020 City: South Pasadena
Project #: CA20\_5029\_002

Summary

Summary														
Time	#1	#2	#3	# 4	# 5	#6	#7	#8	#9	# 10	# 11	# 12	# 13	Total
0:00 AM 0:15	0	5 9	0	0	0	0	0	0	0	0	0	0	0	5 9
0:30	0	6	1	0	1	0	0	0	0	0	0	0	0	8
0:45	0	6	1	0	0	0	0	0	0	0	0	0	0	7
1:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
1:15	0	4	1	0	0	0	0	0	0	0	0	0	0	5
1:30 1:45	0	2 4	2 1	0	1 0	0	0	0	0	0	0	0	0	5 5
2:00	0	3	0	0	1	0	0	0	0	0	0	0	0	4
2:15	0	4	1	ō	ō	ō	ō	0	0	0	0	0	0	5
2:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:45	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:00 3:15	0	0 2	1 0	0	0	0	0	0	0	0	0	0	0	1 2
3:30	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:45	0	2	0	ō	ō	0	0	0	0	0	0	0	0	2
4:00	0	5	1	0	0	0	0	0	0	0	0	0	0	6
4:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 4:45	0	7 8	0	0	0	0	0	0	0	0	0	0	0	7 11
5:00	0	10	2	0	0	0	0	0	0	0	0	0	0	12
5:15	0	16	2	ő	ő	ő	ő	ő	ő	ő	0	0	ő	18
5:30	0	17	3	0	0	0	0	0	0	0	0	0	0	20
5:45	0	18	6	0	3	0	0	0	0	0	0	0	0	27
6:00	0	30 44	6 7	0	0	0	0	0	0	0	0	0	0	36
6:15 6:30	0	72	13	0	0	0	0	0	0	0	0	0	0	51 85
6:45	0	101	19	0	1	0	0	0	0	0	0	0	0	121
7:00	2	130	15	0	3	0	0	0	0	0	0	0	0	150
7:15	0	187	21	1	0	1	0	0	0	0	0	0	0	210
7:30	0	216	45	0	1	0	0	0	0	0	0	0	0	262
7:45 8:00	0	265 192	58 40	1	6 2	0	0	0	0	0	0	0	0	330 236
8:00 8:15	0	176	31	0	2 2	0	0	0	0	0	0	0	0	236
8:30	1	168	28	0	3	0	0	0	0	0	0	0	0	200
8:45	0	144	32	0	1	0	0	0	0	0	0	0	0	177
9:00	0	127	15	0	2	0	0	0	0	0	0	0	0	144
9:15 9:30	0	117 93	20 21	0	0 1	1 0	0	0	0	0	0	0	0	138 115
9:45	0	105	35	1	3	0	0	0	0	0	0	0	0	144
10:00	1	70	22	0	3	0	0	0	0	0	0	0	0	96
10:15	0	78	15	1	2	0	0	0	0	0	0	0	0	96
10:30 10:45	0	72 85	17 17	0	1 6	0 1	0	0	0	0	0	0	0	90 110
11:00	0	76	18	0	1	0	0	0	0	0	0	0	0	95
11:15	1	78	17	ō	1	0	0	0	0	0	0	0	0	97
11:30	1	88	25	0	0	1	0	0	0	0	0	0	0	115
11:45	0	89	14	0	0	0	0	0	0	0	0	0	0	103
12:00 PM 12:15	0	87 86	16 27	1	1	0	0	0	0	0	0	0	0	105 117
12:30	0	89	21	0	0	0	0	0	0	0	0	0	0	110
12:45	0	93	18	ő	3	Ö	ő	Ö	0	0	0	0	0	114
13:00	1	96	16	0	1	0	0	0	0	0	0	0	0	114
13:15	0	95	11	0	2	0	0	0	0	0	0	0	0	108
13:30	1	102	19	0	1	0	0	0	0	0	0	0	0	123
13:45 14:00	1 0	111 111	18 27	0	3	0	0	0	0	0	0	0	0	133 141
14:15	1	114	19	0	4	0	0	0	0	0	0	0	0	138
14:30	1	126	31	ō	1	0	ō	0	0	0	0	0	0	159
14:45	1	167	39	0	1	0	0	0	0	0	0	0	0	208
15:00	1	175	32	0	2	0	0	0	0	0	0	0	0	210
15:15 15:30	0	149 144	41 32	0	2	0	0	0	0	0	0	0	0	192 179
15:45	1	143	27	ő	2	1	0	0	0	0	0	0	0	174
16:00	0	174	39	0	2	0	0	0	0	0	0	0	0	215
16:15	1	165	31	0	5	1	0	0	0	0	0	0	0	203
16:30	0	156	29	0	0	0	0	0	0	0	0	0	0	185
16:45 17:00	2	158 240	40 34	0	4	0	0	0	0	0	0	0	0	204 276
17:15	1	226	31	0	4	0	0	0	0	0	0	0	0	262
17:30	2	222	39	0	3	0	0	0	0	0	0	0	0	266
17:45	0	205	38	0	1	0	0	0	0	0	0	0	0	244
18:00 18:15	0	199 155	20 22	0	1	0	0	0	0	0	0	0	0	220 178
18:30	0	129	23	0	2	0	0	0	0	0	0	0	0	154
18:45	0	141	25	0	1	0	0	0	0	0	0	0	0	167
19:00	0	119	10	0	0	0	0	0	0	0	0	0	0	129
19:15 19:30	0	109 87	11 4	0	0 1	0	0	0	0	0	0	0	0	120 92
19:30 19:45	0	87 72	12	0	1	0	0	0	0	0	0	0	0	92 85
20:00	0	73	6	0	1	0	0	0	0	0	0	0	0	80
20:15	0	78	9	0	0	0	0	0	0	0	0	0	0	87
20:30	0	74	4	0	0	0	0	0	0	0	0	0	0	78
20:45	0	56 69	3 4	0	0	0	0	0	0	0	0	0	0	59 73
21:00 21:15	0	69 46	5	0	0	0	0	0	0	0	0	0	0	73 51
21:30	0	58	2	o	0	0	0	0	0	0	0	0	0	60
21:45	0	32	3	0	0	0	0	0	0	0	0	0	0	35
22:00	0	42	6	0	0	0	0	0	0	0	0	0	0	48
22:15 22:30	0	28 18	4	0	0	0	0	0	0	0	0	0	0	32 21
22:30 22:45	0	18 23	3	0	0	0	0	0	0	0	0	0	0	21 27
23:00	0	23	1	0	0	0	0	0	0	0	0	0	0	24
23:15	0	14	1	0	0	0	0	0	0	0	0	0	0	15
23:30	0	13	2	0	0	1	0	0	0	0	0	0	0	16
23:45 Totals	0 24	7 8040	3 1438	7	103	0 8	0	0	0	0	0	0	0	<b>10</b> 9620
% of Totals	0%	84%	15%	0%	1%	0%								100%
AM Volumes														
% AM	8 0%	2941 31%	576 6%	5 0%	45 0%	4 0%	0	0	0	0	0	0	0	3579 37%
AM Peak Hour	10:45	7:15	7:30	7:15	7:45	10:45								7:15
Volume PM Volumes	3 16	860 5099	174 862	3	13 58	2	0	0	0	0	0	0		1038 6041
% PM	0%	53%	9%	0%	1%	0%	0	U	0	0	0	U	0	63%
PM Peak Hour	16:45	17:00	14:45	12:00	16:45	15:30								17:00
Volume	ectional Pe	893 ak Periods	144	2 AM 7-9	12	2	NOON 12-2			PM 4-6		044	Peak Volun	1048 nes
		All Classes	Volume	Civi 7-3	%	Volume	12-2	%	Volume	1 141 4-0	%	Volume	. can voiun	nes %
l		3.03363	1774	$\longleftrightarrow$	18%	924	$\longleftrightarrow$	10%	1855	$\leftarrow$	19%	5067	$\longleftrightarrow$	53%

# Classification Definitions 7 >=4-Axle Single Units 8 <=4-Axle Single Trailers 9 5-Axle Single Trailers

- Motorcycles
   Passenger Cars
   2-Axle, 4-Tire Single Units
- 4 Buses5 2-Axle, 6-Tire Single Units6 3-Axle Single Units
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- 13 >=7-Axle Multi-Trailers

Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020 Project #: CA20\_5029\_002n

1:00	North Bound															
1:00	Time	# 1	# 2	#3	# 4	# 5	# 6	# 7	#8	# 9	# 10	# 11	# 12	# 13	Total	
2:00	0:00 AM	0	10	0	0	1	0	0	0	0	0	0	0	0	11	
3:00	1:00	0	7	2	0	1	0	0	0	0	0	0	0	0	10	
4:00	2:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2	
5:00	3:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	
6:00	4:00	0	12	3	_	0	0	0	_	_	0	0	0	0	15	
7:00		0			0	0	0	0	0	0	0	0	0	0	52	
8:00	6:00	0			0	1		0				0	0	0	180	
9:00		0	461			5								0	536	
10:00		1				3		_	_	_	_	-	_	0	421	
11:00   0   174   40   0   2   0   0   0   0   0   0   0		0				-								-	305	
12:00 PM							-	_				-		_	216	
13:00		0			0	2								0	216	
14:00		-					_		_	_	_		_	_	235	
15:00		_	-				_	_	-	-		_	-	_	261	
16:00		_			-	_	-	_	-	-	_	_	_	_	354	
17:00															338	
18:00															382	
19:00								-				_		-	452	
20:00		_	_				_	_	_		_	_		-	313	
21:00						_	_	-	~	_		-	_	-	187	
22:00		_			-		-	_	_		_	_	_	_	113	
23:00						-		-				-	-	-	90	
Totals		-			-	_			_			_			52	
Mof Totals   0%   84%   14%   0%   1%   100		_					0	0	0	0	0	0	0	0	23	
AM Volumes 2 1646 298 1 20 0 0 0 0 0 0 0 0 0 0 0 0 0 196 % AM 0% 35% 6% 0% 0% 0%		_														
% AM         0%         35%         6%         0%         0%         0         41           AM Peak Hour Volume         8:00         7	% of Totals	0%	84%	14%	0%	1%									100%	
AM Peak Hour Volume         8:00         7:00         53           PM Volumes         6         2375         386         1         32         0	AM Volumes	2	1646	298	1	20	0	0	0	0	0	0	0	0	1967	
Volume         1         461         69         1         5         53           PM Volumes         6         2375         386         1         32         0 <th>% AM</th> <th>0%</th> <th>35%</th> <th>6%</th> <th>0%</th> <th>0%</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>41%</th>	% AM	0%	35%	6%	0%	0%									41%	
PM Volumes         6         2375         386         1         32         0	AM Peak Hour	8:00	7:00	7:00	7:00	7:00									7:00	
% PM         0%         50%         8%         0%         1%         59           PM Peak Hour Volume         13:00         17:00         15:00         12:00         16:00         16:00         17:00 </th <th>Volume</th> <th>1</th> <th>461</th> <th>69</th> <th>1</th> <th>5</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>536</th>	Volume	1	461	69	1	5									536	
PM Peak Hour Volume         13:00         17:00         15:00         12:00         16:00         17:00         17:00         45           Directional Peak Periods All Classes         AM 7-9         NOON 12-2         PM 4-6         Off Peak Volumes           All Classes         Volume         %         Volume         %         Volume         %	PM Volumes	6	2375	386	1	32	0	0	0	0	0	0	0	0	2800	
Volume         2         389         63         1         8         1         8         45           Directional Peak Periods         AM 7-9         NOON 12-2         PM 4-6         Off Peak Volumes           All Classes         Volume         %         Volume         %         Volume         %	% PM	0%	50%	8%	0%	1%									59%	
Directional Peak Periods AM 7-9 NOON 12-2 PM 4-6 Off Peak Volumes All Classes Volume % Volume % Volume %	PM Peak Hour	13:00	17:00	15:00	12:00	16:00									17:00	
All Classes Volume % Volume % Volume % Volume %	Volume	Volume 2 389			1	8									452	
	Dir	ectional Pe	ak Periods		AM 7-9			NOON 12-2			PM 4-6		Off Peak Volumes			
057 \$\rightarrow 200\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				Volume		%	Volume		%	Volume		%	Volume		%	
20/0   450   10/0   054   1/0   2480   52%	7 0.33555			957	$\longleftrightarrow$	20%	496	$\longleftrightarrow$	10%	834	$\longleftrightarrow$	17%	2480	$\longleftrightarrow$	52%	

#### 1 Motorcycles 4 Buses

- 2 Passenger Cars 3 2-Axle, 4-Tire Single Units
- 5 2-Axle, 6-Tire Single Units 6 3-Axle Single Units
- 7 > =4-Axle Single Units

**Classification Definitions** 

- 8 <=4-Axle Single Trailers
- **9** 5-Axle Single Trailers
- 10 >=6-Axle Single Trailers
- 11 <=5-Axle Multi-Trailers
- 12 6-Axle Multi-Trailers
- 13 >=7-Axle Multi-Trailers

City: South Pasadena

Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020

South Bound															
Time	# 1	# 2	#3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11	# 12	# 13	Total	
0:00 AM	0	16	2	0	0	0	0	0	0	0	0	0	0	18	
1:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9	
2:00	0	9	1	0	1	0	0	0	0	0	0	0	0	11	
3:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4	
4:00	0	8	1	0	0	0	0	0	0	0	0	0	0	9	
5:00	0	18	4	0	3	0	0	0	0	0	0	•	0	25	
6:00	0	98	15	0	0	0	0	0	0	0	0	_	0	113	
7:00	2	337	70	1	5	1	0	0	0	0	0		0	416	
8:00	1	319	75	1	5	0	0	0	0	0	0	_	0	401	
9:00	0	190	42	1	2	1	0	0	0	0	0	_	0	236	
10:00	1	132	32	1	9	1	0	0	0	0	0	_	0	176	
11:00	2	157	34	0	0	1	0	0	0	0	0	_	0	194	
12:00 PM	0	170	39	1	1	0	0	0	0	0	0	_	0	211	
13:00	1	178	34	0	4	0	0	0	0	0	0	_	0	217	
14:00	2	223	61	0	5	1	0	0	0	0	0	_	0	292	
15:00	1	342	69	0	4	1	0	0	0	0	0	_	0	417	
16:00	3	336	82	0	3	1	0	0	0	0	0		0	425	
17:00	3	504	82	0	7	0	0	0	0	0	0		0	596	
18:00	0	351	54	0	1	0	0	0	0	0	0	_	0	406	
19:00	0	218	20	0	1	0	0	0	0	0	0	_	0	239	
20:00	0	178	13 8	0	0	0	0	0	0	0 0	0	_	0	191 129	
21:00 22:00	0	121 65		0	0	0	0	0	0	0	0		0	76	
23:00	0	38	11 3	0	0	1	0	0	0	0	0	_	0	42	
Totals	16	4019	754	5	51	8	U	U	U	U	U	U	U	4853	
% of Totals	0%	83%	16%	0%	1%	0%								100%	
	***			• • •											
AM Volumes	6	1295	278	4	25	4	0	0	0	0	0	0	0	1612	
% AM	0%	27%	6%	0%	1%	0%								33%	
AM Peak Hour	7:00	7:00	8:00	7:00	10:00	7:00								7:00	
Volume	2	337	75	1	9	1								416	
PM Volumes	10	2724	476	1	26	4	0	0	0	0	0	0	0	3241	
% PM	0%	56%	10% 16:00	0%	1%	0%								67%	
	<b>PM Peak Hour</b> 16:00 17:00			12:00	17:00	14:00								17:00	
Volume	3	504	82	1	7	1								596	
Dir	Directional Peak Periods		Volume	AM 7-9			NOON 12-2			PM 4-6		Off Peak Volumes			
	All Classes				%	Volume		%	Volume		%	Volume		%	
				$\longrightarrow$	17%	428	$\longrightarrow$	9%	1021	<u> </u>	21%	2587	<u> </u>	53%	

#### 1 Motorcycles

2 Passenger Cars

- 4 Buses
- 5 2-Axle, 6-Tire Single Units
- 3 2-Axle, 4-Tire Single Units 6 3-Axle Single Units
- 7 > =4-Axle Single Units

**Classification Definitions** 

- 8 <=4-Axle Single Trailers
- **9** 5-Axle Single Trailers
- 10 >=6-Axle Single Trailers
- 11 <=5-Axle Multi-Trailers
- 12 6-Axle Multi-Trailers

13 >=7-Axle Multi-Trailers

City: South Pasadena

Project #: CA20\_5029\_002s

Meridian Ave N/O Oak St

Day: Wednesday Date: 1/22/2020

#### Summary

Summary															
Time	# 1	# 2	# 3	# 4	# 5	# 6	# 7	#8	# 9	# 10	# 11	# 12	# 13	Total	
0:00 AM	0	26	2	0	1	0	0	0	0	0	0	0	0	29	
1:00	0	= -	4	0	1	0	0	0	0	0	0	0	0		
2:00	0	11	1	0	1	0	0	0	0	0	0	0	_	13	
3:00	0	6	1	0	0	0	0	0	0	0	0	0	0		
4:00	0	20	4	0	0	0	0	0	0	0	0	0	0	24	
5:00	0		13	0	3	0	0	0	0	0	0	0	0		
6:00	0	247	45	0	1	0	0	0	0	0	0	0	-		
7:00	2	798	139	2	10	1	0	0	0	0	0	0			
8:00	2	680	131	1	8	0	0	0	0	0	0	0	0	_	
9:00	0	442	91	1	6	1	0	0	0	0	0	0	0	_	
10:00	2	305	71	1	12	1	0	0	0	0	0	0	_	392	
11:00	2	331	74	0	2	1	0	0	0	0	0	0	_	410	
12:00 PM	0	355	82	2	7	0	0	0	0	0	0	0	-	446	
13:00	3	404	64	0	7	0	0	0	0	0	0	0			
14:00	3	518	116	0	8	1	0	0	0	0	0	0	_	646	
15:00	3	611	132	0	8	1	0	0	0	0	0	0			
16:00	3	653	139	0	11	1	0	0	0	0	0	0	-		
17:00	4	893	142	0	9	0	0	0	0	0	0	0	_		
18:00	0	624	90	0	5	0	0	0	0	0	0	0	_		
19:00	0		37	0	2	0	0	0	-	0	0	0	_		
20:00	0	281	22	0	1	0	0	0	0	0	0	0	_	304	
21:00	0	205	14	0	0	0	0	0	0	0	0	0	_	_	
22:00	0	111	17	0	0	0	0	0	0	0	0	0	-	128	
23:00	0	57	7	0	0	1	0	0	0	0	0	0	0	65	
Totals	24	8040	1438	7	103	8								9620	
% of Totals	0%	84%	15%	0%	1%	0%								100%	
AM Volumes	8	2941	576	5	45	4	0	0	0	0	0	0	0	3579	
% AM	0%	31%	6%	0%	0%	0%								37%	
AM Peak Hour	7:00		7:00	7:00	10:00	7:00								7:00	
Volume	2	798	139	2	12	1								952	
PM Volumes	16	5099	862	2	58	4	0	0	0	0	0	0	0	6041	
% PM	0%	53%	9%	0%	1%	0%								63%	
PM Peak Hour	17:00	17:00	17:00	12:00	16:00	14:00								17:00	
Volume			142	2	11	1								1048	
Dir	Directional Peak Periods						NOON 12-2			PM 4-6		Off Peak Volumes			
All Classes			Volume		%	Volume		%	Volume	_	%	Volume		%	
All Classes		1774	$\longleftrightarrow$	18%	924	$\longleftrightarrow$	10%	1855	$\longleftrightarrow$	19%	5067	$\longleftrightarrow$	53%		
		±,,,		10/0	J = -		10/0	1000		±3/0	5507		3370		

#### 1 Motorcycles

- 2 Passenger Cars
- 3 2-Axle, 4-Tire Single Units
- 4 Buses
- 5 2-Axle, 6-Tire Single Units
- 6 3-Axle Single Units

#### 7 > =4-Axle Single Units

**Classification Definitions** 

- 8 <=4-Axle Single Trailers **9** 5-Axle Single Trailers
- 10 >=6-Axle Single Trailers
- 11 <=5-Axle Multi-Trailers 12 6-Axle Multi-Trailers
- 13 >=7-Axle Multi-Trailers

City: South Pasadena

Project #: CA20\_5029\_002

# Prepared by NDS/ATD Prepared by National Data & Surveying Services

#### **VOLUME**

#### Meridian Ave N/O Oak St

 Day: Wednesday
 City: South Pasadena

 Date: 1/22/2020
 Project #: CA20\_5029\_002

	ALS		NB 4,767		SB 4,853		EB 0		WB 0						Total 9,620				
AM Period	NB		SB		ЕВ	WB			TAL	PM Period	NB		SB		EB	V	VB	ТО	TAL
0:00	1		4		0	0		5		12:00	62		43		0		0	105	
0:15	5		4		0	0		9		12:15 12:30	58		59		0		0	117	
0:30 0:45	4	11	4 6	18	0 0	0 0		8 7	29	12:30 12:45	59 56	235	51 58	211	0 0		0 0	110 114	446
1:00	2		2	10	0	0		4		13:00	58	233	56		0		0	114	110
1:15	2		3		0	0		5		13:15	61		47		0		0	108	
1:30 1:45	2 4	10	3 1	9	0 0	0 0		5 5	19	13:30 13:45	65 77	261	58 56	217	0		0 0	123 133	478
2:00	0	10	4		0	0		4	13	14:00	81	201	60	217	0		0	141	470
2:15	1		4		0	0		5		14:15	72		66		0		0	138	
2:30 2:45	1 0	2	1 2	11	0 0	0 0		2	13	14:30 14:45	85 116	354	74 92	292	0		0 0	159 208	646
3:00	1		0	11	0	0		1	13	15:00	109	334	101	232	0		0	210	040
3:15	1		1		0	0		2		15:15	80		112		0		0	192	
3:30	0	2	2	4	0	0 0		2	7	15:30 15:45	70	220	109	417	0 0		0	179	755
3:45 4:00	2	3	14	4	0	0		<u>2</u>	7	16:00	79 100	338	95 115	417	0		0	174 215	755
4:15	0		0		Ö	0				16:15	101		102		0		0	203	
4:30	5		2		0	0		7		16:30	88		97		0		0	185	
4:45 5:00	<u>8</u> 8	15	<u>3</u>	9	0	0 0		11 12	24	16:45 17:00	93 124	382	111 152	425	0		0	204 276	807
5:15	12		6		0	0		18		17:15	110		152		0		0	262	
5:30	16		4		0	0		20		17:30	111		155		0		0	266	
5:45	16	52	11	25	0	0		27	77	17:45 18:00	107	452	137	596	0		0	244	1048
6:00 6:15	30 38		6 13		0 0	0 0		36 51		18:00 18:15	86 82		134 96		0 0		0 0	220 178	
6:30	45		40		Ö	0		85		18:30	74		80		0		0	154	
6:45	67	180	54	113	0	0		121	293	18:45	71	313	96	406	0		0	167	719
7:00	79 140		71 70		0 0	0 0		150 210		19:00 19:15	59 48		70 72		0		0 0	129 120	
7:15 7:30	152		110		0	0		262		19:30	48		44		0		0	92	
7:45	165	536	165	416	0	0		330	952	19:45	32	187	53	239	0		0	85	426
8:00	114		122		0	0		236		20:00	29		51		0		0	80	
8:15 8:30	87 118		122 82		0 0	0 0		209 200		20:15 20:30	32 26		55 52		0 0		0 0	87 78	
8:45	102	421	75	401	Ö	0		177	822	20:45	26	113	33	191	0		0	59	304
9:00	89		55		0	0		144		21:00	33		40		0		0	73	
9:15 9:30	71 69		67 46		0 0	0 0		138 115		21:15 21:30	17 27		34 33		0 0		0 0	51 60	
9:45	76	305	68	236	0	0		144	541	21:45	13	90	22	129	0		0	35	219
10:00	54		42		0	0		96		22:00	25		23		0		0	48	
10:15	54		42		0	0		96		22:15	10		22		0		0	32	
10:30 10:45	46 62	216	44 48	176	0 0	0 0		90 110	392	22:30 22:45	7 10	52	14 17	76	0 0		0 0	21 27	128
11:00	52		43		0	0		95	552	23:00	11		13		0		0	24	
11:15	53		44		0	0		97		23:15	4		11		0		0	15	
11:30 11:45	51 60	216	64 43	194	0 0	0 0		115 103	410	23:30 23:45	5 3	23	11 7	42	0 0		0 0	16 10	65
TOTALS	- 00	1967	<del>5</del>	1612				103	3579	TOTALS	<u> </u>	2800		3241			<u> </u>	10	6041
SPLIT %		55.0%		45.0%					37.2%	SPLIT %		46.3%		53.7%					62.8%
		A 1136-	-0=-	1.0		NB		SB		EB		WB						To	otal
	D.	AILY 1	OTA	ILS		4,767		4,853		0		0							620
AM Peak Hour		7:15		7:30					7:15	PM Peak Hour		17:00		17:00					17:00
AM Pk Volume		7:15 571		519					1038	PM Pk Volume		452		596					1048
Pk Hr Factor		0.865		0.786					0.786	Pk Hr Factor		0.911		0.961					0.949
7 - 9 Volume		957		817		0	0		1774	4 - 6 Volume		834		1021		0	0		1855
7 - 9 Peak Hour		7:15		7:30					7:15	4 - 6 Peak Hour		17:00		17:00					17:00
7 - 9 Pk Volume		571		519					1038	4 - 6 Pk Volume		452		596					1048
Pk Hr Factor		0.865		0.786	C	).000	0.000		0.786	Pk Hr Factor		0.911		0.961		0.000	0.000		0.949

### National Data & Surveying Services

## **Intersection Turning Movement Count**

Location: Meridian Ave & Oak St City: South Pasadena

	South Pasa 1-Way Stop												Pre		20-05030-0 1/22/2020	01	
Control:	1-way Stop	) (VVB)						То	tal					Date:	1/22/2020		
NS/EW Streets:		Meridia	ın Ave			Meridia	n Ave			Oak	St			Oak	St		
			BOUND			SOUTH					BOUND			WESTE			
AM	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
7:00 AM 7:15 AM	0	79 121	5 6	0	3 2	69 57	0	0	0	0	0	0	4 2	0	7 10	0	167 198
7:30 AM	0	137	28	0	19	84	0	0	0	0	0	0	2	0	17	0	287
7:45 AM 8:00 AM	0	131 87	71 22	0	61 13	112 113	0	0	0	0	0	0	6 12	0	32 35	0	414 282
8:15 AM 8:30 AM	0	78 109	6	0	9 5	115 87	0	0	0	0	0	0	2 2	0	8	0	218 217
8:45 AM	0	98	4	0	3	73	0	0	0	0	0	0	0	0	9	0	187
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	840 84.76%	151 15.24%	0 0.00%	115 13.94%	710 86.06%	0 0.00%	0 0.00%	1 100.00%	0 0.00%	0 0.00%	0 0.00%	30 19.61%	0 0.00%	123 80.39%	0 0.00%	1970
PEAK HR:		07:30 AM -	08:30 AM						100.00%			0.00%					TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0.000	433 0.790	127 0.447	0.000	102 0.418	424 0.922	0.000	0.000	1 0.250	0.000	0.000	0.000	22 0.458	0.000	92 0.657	0 0.000	1201
TEARTIRTAGION .	0.000	0.6		0.000	0.410	0.722		0.000	0.230	0.2		0.000	0.430	0.60		0.000	0.725
		NORTH	BOUND			SOUTH	BOUND			EASTE	BOUND			WESTE	OUND		
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM	0	50	4	0	2	45	0	0	0	0	0	0	2	0	3	0	106
11:15 AM 11:30 AM	0	49 41	5 2	0	1 7	42 45	0	0	0	0	0	0	3 2	0	6 5	0	106 102
11:45 AM 12:00 PM	0	61 50	<u>6</u> 5	0	3 2	50 33	0	0	0	0	0	0	3	0	9	0	121 102
12:15 PM	Ō	51	1	0	5	55	0	0	0	0	0	0	2	0	4	0	118
12:30 PM 12:45 PM	0	56 55	3 4	0	3	52 54	0	0	0	0	0	0	1 5	0	3	0	118 124
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	413	30	0	26	376	0	0	0	0	0	0	19	0	33	0	897
APPROACH %'s : PEAK HR :	0.00%	93.23% 12:00 PM -	6.77% 01:00 PM	0.00%	6.47%	93.53%	0.00%	0.00%					36.54%	0.00%	63.46%	0.00%	TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0.000	212 0.946	13 0.650	0 0.000	13 0.650	194 0.882	0 0.000	0 0.000	0.000	0.000	0.000	0 0.000	11 0.550	0 0.000	19 0.528	0 0.000	462
PEAR HR FACTOR :	0.000	0.946		0.000	0.050	0.86		0.000	0.000	0.000	0.000	0.000	0.550	0.000		0.000	0.931
		NORTH	BOUND			SOUTH	BOUND		EASTBOUND				WESTE				
PM	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
2:00 PM	0	67	5	0	8	51	0	0	0	0	0	0	3	0	21	0	155
2:15 PM 2:30 PM	0	54 77	7	0	2 11	65 63	0	0	0	0	0	0	6	0	20 4	0 1	154 162
2:45 PM 3:00 PM	0	94 81	15 9	0	19 16	69 80	0	0	0	0	0	0	9 5	0	19 25	0	225 216
3:15 PM	0	76	3	0	8	107	0	0	0	0	0	0	6	0	16	0	216
3:30 PM 3:45 PM	0	64 72	5 1	0	6 8	97 84	0	0	0	0	0	0	4	0	6 6	0	182 174
4:00 PM 4:15 PM	0	85 100	3 4	0	9 5	94 110	0	0	0	0	0	0	4	0	10 10	0	205 235
4:30 PM	0 0	81	7	0	2	88	0	0	0	Ō	0	0	6 6	0	6	0	190
4:45 PM 5:00 PM	0	90 111	6	0	6 8	106 134	0	0	0	0	0	0	4 6	0	4 11	0	212 277
5:15 PM	0	111	4	0	17	147	0	0	0	0	0	0	7	0	5	Ó	291
5:30 PM 5:45 PM	0 0	106 95	4 7	0 0	12 9	139 134	0 0	0 0	0	0	0 0	0 0	3 6	0	4 7	0	268 258
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0	1364 94.13%	85 5.87%	0.00%	146 8.52%	1568 91.48%	0.00%	0	0	0	0	0	81 31.52%	0.00%	174 67.70%	2	3420
PEAK HR :	(	05:00 PM -	06:00 PM														TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0.000	423 0.953	21 0.750	0.000	46 0.676	554 0.942	0.000	0.000	0.000	0.000	0.000	0.000	22 0.786	0.000	27 0.614	1 0.250	1094
. Z.iii iik i Aorok .	0.000	0.733		0.000	0.070	0.742		0.000	0.000	0.000	0.000	0.000	0.700	0.60		0.230	0.940

#### National Data & Surveying Services

## **Intersection Turning Movement Count**

Location: Meridian Ave & Oak St

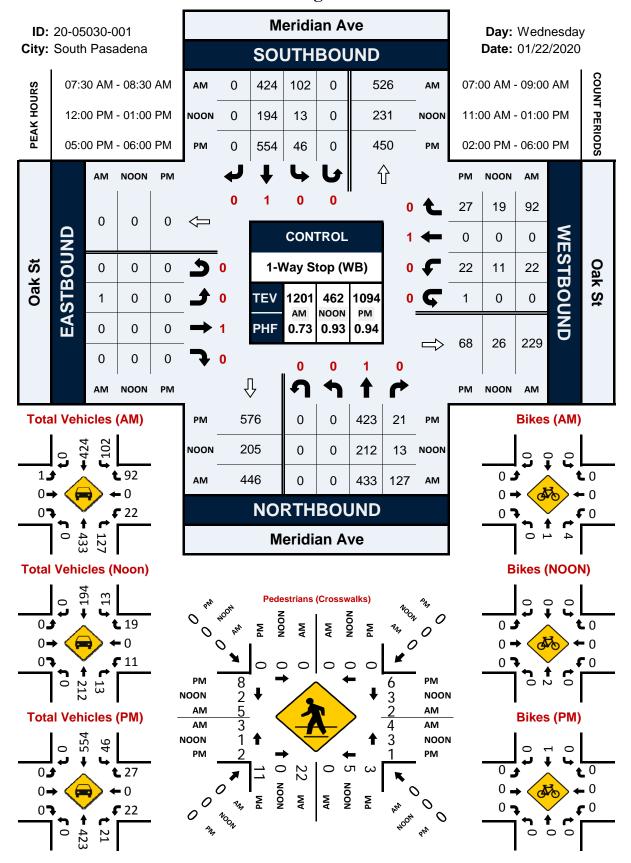
	Meridian Av South Pasa 1-Way Stop	dena						Bil	ces				Pr		20-05030-0 1/22/2020	01	
NS/EW Streets:		Meridia	ın Ave			Meridia	n Ave		103	Oal	k St			Oak	: St		
AM	0	NORTH 1	BOUND 0	0	0	SOUTH 1	0	0	0	EAST 1	BOUND	0	0	WESTI 1	BOUND 0	0	
7:00 AM 7:15 AM 7:30 AM 7:45 AM	0 0 0 0	NT 1 0 1 0	NR 0 0 1 2	0 0 0 0	0 0 0 0	ST 0 0 0	SR 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 0	WR 0 0 0	0 0 0	1 0 2 2
8:00 AM 8:15 AM 8:30 AM 8:45 AM	0 0 0 0	0 0 0 0	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	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0	0 1 0 1
TOTAL VOLUMES : APPROACH %'s : PEAK HR :	NL 0 0.00%	NT 2 33.33% D7:30 AM -	NR 4 66.67%	NU 0 0.00%	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0 0.00%	WT 0 0.00%	WR 1 100.00%	WU 0 0.00%	TOTAL 7
PEAK HR VOL : PEAK HR FACTOR :	0 0.000	1 0.250 0.6	4 0.500	0 0.000	0 0.000	0 0.000	0.000	0 0.000	0 0.000	0.000	0.000	0.000	0 0.000	0.000	0.000	0.000	5 0.625
NOON			BOUND			SOUTH					BOUND						
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM 11:15 AM 11:30 AM 11:45 AM	0 0 0	1 0 0	0 0 0	0 0 0	0 0 0	0 1 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	1 1 0
12:00 PM 12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM 12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :	NL 0 0.00%	NT 3 100.00%	NR 0 0.00%	NU 0 0.00%	SL 0 0.00%	ST 2 100.00%	SR 0 0.00%	SU 0 0.00%	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 5
PEAK HR : PEAK HR VOL : PEAK HR FACTOR :	0 0.00	2 0.500 0.5	0 0.000	0 0.000	0 0.000	0.000	0.000	0.000	0 0.000	0 0.000	0 0.000	0 0.000	0.000	0.000	0.000	0.000	2 0.500
		NORTH	BOUND			SOUTH	BOUND			EAST	BOUND			WEST	BOUND		
PM 2:00 PM	0 NL 0	1 NT 0	0 NR 0	NU 0	0 SL 0	1 ST 0	0 SR 0	O SU O	0 EL 0	1 ET 0	O ER O	EU 0	0 WL	1 WT 0	WR 0	0 WU 0	TOTAL 0
2:15 PM 2:30 PM 2:45 PM	0	0 0 0	0 0 0	0 0	0	1 0 0	0 0 0	0	0	0 0 0	0 0 0	0	0 1 1	0 0 0	0 0 0	0	1 1 1
3:00 PM 3:15 PM	0	1 0	0	0	0	1 0	0 0	0	0	0	0 0	0	0	0	0 0	0	2
3:30 PM 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM 4:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0 2
5:00 PM 5:15 PM	0	0 0	0	0	0 0	1 0	0	0	0	0	0	0	0	0	0 0	0	1 0
5:30 PM 5:45 PM	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES : APPROACH %'s :		NT 2 100.00%	NR 0 0.00%	NU 0 0.00%	SL 0 0.00%	ST 3 100.00%	SR 0 0.00%	SU 0 0.00%	EL 0	ET 0	ER 0	EU 0	WL 3 100.00%	WT 0 0.00%	WR 0 0.00%	WU 0 0.00%	TOTAL 8
PEAK HR : PEAK HR VOL : PEAK HR FACTOR :	0 0.00	0 0 0.000	06:00 PM 0 0.000	0.000	0 0.000	1 0.250 0.2	0 0.000 50	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0.000	1 0.250

# Intersection Turning Movement Count City: South Pasadena Turning Movement Date: 1/22/2020

			Pede	strians	(Crossw	alks)			_
NS/EW Streets:	Meridi	an Ave	Meridi	an Ave	Oal	k St	Oak	: St	
AM	NORT EB	H LEG WB	SOUT EB	H LEG WB	EAST NB	Γ LEG SB	WEST NB	LEG SB	TOTAL
7:00 AM	0	0	1	1	0	0	0	3	5
7:15 AM	0	0	1	0	0	0	2	0	3
7:30 AM 7:45 AM	0 0	0 0	12 8	0 0	1	1 0	1 2	3 0	18 11
7:45 AW 8:00 AM	0	0	2	0	1	0	0	2	5
8:15 AM	0	0	0	0	1	1	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	1	0	1	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	24	2	4	3	5	8	46
APPROACH %'s :	07.00.414	00.00.444	92.31%	7.69%	57.14%	42.86%	38.46%	61.54%	TOTAL
PEAK HR : PEAK HR VOL :	07:30 AM	- 08:30 AM 0	22	0	4	2	3	5	TOTAL 36
PEAK HR FACTOR :	U	U	0.458	U	1.000	0.500	0.375	0.417	
				158		750	0.5		0.500
					F		14507		
NOON	NORT EB	H LEG WB	SOUT EB	H LEG WB	EAST NB	Γ LEG SB	WEST NB	LEG SB	TOTAL
11:00 AM	0	0	0	0	0	1	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	1	1	0	2
11:45 AM 12:00 PM	0	0	0	2	2	0	0	<u>2</u> 1	<u>4</u> 5
12:15 PM	0	0	0	2	0	1	0	0	3
12:30 PM	0	0	0	0	1	2	0	0	3
12:45 PM	0	0	0	1	0	0	1	1	3
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	1	5	3	5	3	4	21
APPROACH %'s:			16.67%	83.33%	37.50%	62.50%	42.86%	57.14%	
PEAK HR : PEAK HR VOL :	12:00 PM	- <b>01:00 PM</b> 0	0	5	3	3	1	2	TOTAL 14
PEAK HR FACTOR :	U	U	U	0.625	0.375	0.375	0.250	0.500	
			0.0	525	0.5	500	0.3	75	0.700
	NODT	11150	COLIT	11150	FACE		WECT	1.50	1
PM	EB	H LEG WB	EB	H LEG WB	NB	Γ LEG SB	WEST NB	SB	TOTAL
2:00 PM	0	0	0	3	0	1	1	0	5
2:15 PM	0	0	0	2	0	1	1	1	5
2:30 PM	0 0	0 0	0	1 1	1 2	0 1	2	0 0	4
2:45 PM 3:00 PM	0	0	0	<u> </u>	1	3	1	1	6 11
3:15 PM	0	0	2	6	3	2	1	1	15
3:30 PM	0	0	0	0	0	0	0	0	0
3:45 PM 4:00 PM	0	0	3	<u>1</u> 3	<u>3</u>	0	0	0	7
4:15 PM	0	0	2	0	0	0	0	0	2
4:30 PM	0	0	0	2	1	1	1	3	8
4:45 PM	0	0	1	3	0	2	2	2	10
5:00 PM 5:15 PM	0 0	0 0	3 4	2 0	1 0	2 0	1 0	1 3	10 7
5:30 PM	0	0	3	1	0	3	1	3	11
5:45 PM		0	1	0	0	1	0	1	3
	ED.	WD	רח	/A/D	ND	CD	ND	CD	TOTAL
TOTAL VOLUMES :	EB 0	WB 0	EB 22	WB 30	NB 13	SB 17	NB 12	SB 17	TOTAL 111
APPROACH %'s :		5	42.31%	57.69%	43.33%	56.67%	41.38%	58.62%	'''
PEAK HR :		- 06:00 PM							TOTAL
PEAK HR VOL :	0	0	11	3	1	6	2	8	31
PEAK HR FACTOR :			0.688	0.375 700	0.250	0.500 583	0.500 0.6	0.667	0.705

## Meridian Ave & Oak St

## **Peak Hour Turning Movement Count**



# **Intersection Turning Movement Count**

Location: Meridian Ave & Maple St City: South Pasadena Control: 1-Way Stop (WB)

Project ID: 20-05030-002
Date: 1/22/2020

control.	1-way 3to	, (WB)						To	tal					Date.	1/22/2020		
NS/EW Streets:		Meridia	n Ave			Meridia	n Ave			Maple	e St			Maple	e St		
		NORTH				SOUTH		<u> </u>		EASTB				WESTE			
AM	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
7:00 AM	0	32	1	0	25	45	0	0	0	0	0	0	1	0	39	0	143
7:15 AM	0	56	2	0	23	45	0	0	0	0	1	0	0	0	69	0	196
7:30 AM 7:45 AM	0	86 94	1 3	0	28 39	61 95	0	0	0 1	0	0	0	2 14	0	61 54	0	239 300
8:00 AM	0	38	11	0	46	89	0	0	0	0	0	0	11	0	40	0	235
8:15 AM	Ō	46	6	0	54	40	0	0	0	0	Ō	Ō	2	0	37	0	185
8:30 AM	0	55 36	1	0	38 31	36 39	0	0	0	0	0	0	3 2	0	56 43	0	189 157
8:45 AM	U	30	6	U	31	39	U	U	U	U	U	U	2	U	43	U	157
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0 0.00%	443 93.46%	31 6.54%	0 0.00%	284 38.69%	450 61.31%	0 0.00%	0 0.00%	1 50.00%	0 0.00%	1 50.00%	0 0.00%	35 8.06%	0 0.00%	399 91.94%	0 0.00%	1644
PEAK HR :		07:15 AM -		0.0078	30.0770	01.3170	0.0078	0.0076	30.0078	0.0076	30.0078	0.0078	0.0076	0.0076	71.7470	0.0078	TOTAL
PEAK HR VOL :	0	274	17	0	136	290	0	0	1	0	1	0	27	0	224	0	970
PEAK HR FACTOR :	0.000	0.729	0.386	0.000	0.739	0.763	0.000	0.000	0.250	0.000	0.250	0.000	0.482	0.000	0.812	0.000	0.808
		0.75	JO			0.70	17			0.30	50			0.50	J7		
NOON	_	NORTH		_		SOUTH		_		EASTB		_	_	WESTE			
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM	0	17	6	0	10	29	0	0	0	0	0	0	3	0	29	0	94
11:15 AM	0	26	5	1	9	32	0	0	0	0	0	0	1	0	18	0	92
11:30 AM 11:45 AM	0	31 30	2	0	11 7	40 38	0	0	0	0	0	0	0	0	15 27	0	99 106
12:00 PM	0	29	3	0	9	26	0	0	0	0	0	0	0	0	22	1	90
12:15 PM	0	39	0	0	11	44	0	0	0	0	0	0	2	0	20	0	116
12:30 PM 12:45 PM	0	25 31	1 1	0	5 10	37 41	0	0	0	0	0	0	2 1	0	16 25	0	86 109
TOTAL VOLUMES :	NL O	NT 228	NR 21	NU 1	SL 72	ST 287	SR 0	O US	EL 0	ET 0	ER 0	EU 0	WL 10	WT 0	WR 172	WU 1	TOTAL 792
APPROACH %'s :	0.00%	91.20%	8.40%	0.40%	20.06%	79.94%	0.00%	0.00%	U	U	U	U	5.46%	0.00%	93.99%	0.55%	172
PEAK HR :		11:30 AM -									_			_			TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0 0.000	129 0.827	8 0.667	0 0.000	38 0.864	148 0.841	0.000	0.000	0.000	0.000	0.000	0.000	3 0.375	0.000	84 0.778	1 0.250	411
T EXILT THE TAG TOTAL	0.000	0.87		0.000	0.001	0.84		0.000	0.000	0.000	0.000	0.000	0.070	0.78		0.200	0.886
		NORTHI	DOLIND			COLITIU	OUND			EASTB	OLIND			WESTE	OUND		
PM	0	1 NORTHI	OOND	0	0	SOUTH!	0	0	0	1	00ND 0	0	0	1 WESTE	OUND	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
2:00 PM 2:15 PM	0	23 30	3 2	0	14 13	42 58	0	0	0 1	0	0	0	4 2	0	23 28	0	109 134
2:30 PM	0	38	5	0	22	36	0	0	0	0	0	0	5	0	41	0	147
2:45 PM	0	55	3	0	22	56	0	0	0	0	0	0	7	0	39	0	182
3:00 PM 3:15 PM	0	48 19	3 0	0	18 30	65 58	0 1	0	0	0	0	0	2 1	0	38 41	0	174 150
3:30 PM	0	33	1	0	25	66	0	0	0	0	0	0	0	0	25	0	150
3:45 PM	0	37	3	0	19	50	0	0	0	0	0	0	11	0	39	0	149
4:00 PM 4:15 PM	0	37 48	3 0	0	25 35	65 61	0	0	0	0	0	0	3 2	0	37 48	0	170 194
4:30 PM	Ō	37	1	0	32	55	0	0	0	0	Ō	0	2	Ō	44	0	171
4:45 PM 5:00 PM	0	44	0	0	35 42	49 96	0	0	0	0	0	0	3	0	38 61	0	171 241
5:00 PM 5:15 PM	0	46	2	0	34	96 87	0	0	0	0	0	0	1	0	56	0	241
5:30 PM	0	34	1	0	30	86	0	0	0	0	0	0	5	1	71	0	228
5:45 PM	0	43	0	0	30	84	0	0	0	0	0	0	2	0	58	0	217
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	612 95.48%	29	0	426	1014	1	0	1	0	0 00%	0	42	1 0 149/	687	0	2813
APPROACH %'s :	0.00%		4.52%	0.00%	29.56%	70.37%	0.07%	0.00%	100.00%	0.00%	0.00%	0.00%	5.75%	0.14%	94.11%	0.00%	TOTAL
PEAK HR :		05:00 PIVI -	06:00 PM														IOTAL
PEAK HR : PEAK HR VOL : PEAK HR FACTOR :	0.000	05:00 PM - 163 0.886	3 0.375	0.000	136 0.810	353 0.919	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0.000	10 0.500	1 0.250	246 0.866	0 0.000	912

# **Intersection Turning Movement Count**

Location: Meridian Ave & Maple St

	South Pasa 1-Way Sto												Pr		20-05030-0 1/22/2020	102	
control.	1-way 5to	p (WD)						Bil	ces					Date.	172272020		
NS/EW Streets:		Meridia	ın Ave			Meridia	n Ave			Мар	ole St			Mapl	e St		
AM	0	NORTH 1	BOUND 0	0	0	SOUTH 1	BOUND	0	0	EAST 1	BOUND	0	0	WESTI 1	BOUND	0	
7:00 AM	NL 0	NT 2	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU	TOTAL 2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
7:30 AM 7:45 AM	0	0 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 1
8:00 AM 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 1
8:30 AM	0	0	0	0	0	0	0	0	0	0	Ō	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 3	NR 0	NU 0	SL 0	ST 1	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 2	WU 0	TOTAL 6
APPROACH %'s : PEAK HR :	0.00%		0.00%	0.00%	0.00%	100.00%	0.00%	0.00%					0.00%	0.00%	100.00%	0.00%	TOTAL
PEAK HR VOL :	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2
PEAK HR FACTOR :	0.000	0.250 0.2	0.000 50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000 0.2	0.250 50	0.000	0.500
		NORTH	BOUND			SOUTH	BOUND			EAST	BOUND			WEST	BOUND		
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM 11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM 12:00 PM	0	<u>0</u> 1	0	0	0	1 0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM 12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	Ō	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
TOTAL VOLUMES :	NL 0	NT 2	NR 0	NU 0	SL 0	ST 2	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 1	WU 0	TOTAL 5
APPROACH %'s:	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	Ů				0.00%	0.00%	100.00%	0.00%	
PEAK HR : PEAK HR VOL :	0	11:30 AM - 1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	TOTAL 2
PEAK HR FACTOR :	0.00	0.250	0.000 50	0.000	0.000	0.250	0.000 50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		NORTH	BOUND			SOUTH	BOUND			FAST	BOUND			WESTI	BOUND		
PM	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
2:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2:15 PM 2:30 PM	0	0	0	0	0	0 0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM 3:00 PM	0	1 0	0	0	0	0 1	0	0	0	0	0	0	0	0	0	0	1
3:15 PM 3:30 PM	0	0	0	0	0	0 1	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 0	0	1 0
4:00 PM 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM 4:45 PM	0 0	1 1	0	0	0	0 1	0	0	0	0 0	0 0	0	1 0	0 0	0	0	2
5:00 PM 5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1 0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM																	
TOTAL VOLUMES :	NL O	NT 3	NR 0	NU 0	SL 0	ST 5	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 1	WT 0	WR 1	O OM	TOTAL 10
APPROACH %'s : PEAK HR :		100.00% 05:00 PM -	0.00% 06:00 PM	0.00%	0.00%	100.00%	0.00%	0.00%					50.00%	0.00%	50.00%	0.00%	TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0.00	0	0.000	0.000	0 0.000	1 0.250	0,000	0 0.000	0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	0 0.000	1
PEAK FIR FACIOR :	0.00	0.000	0.000	0.000	0.000	0.250		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250

0 1 0 0 0.000 0.250 0.000 0.000 0.250

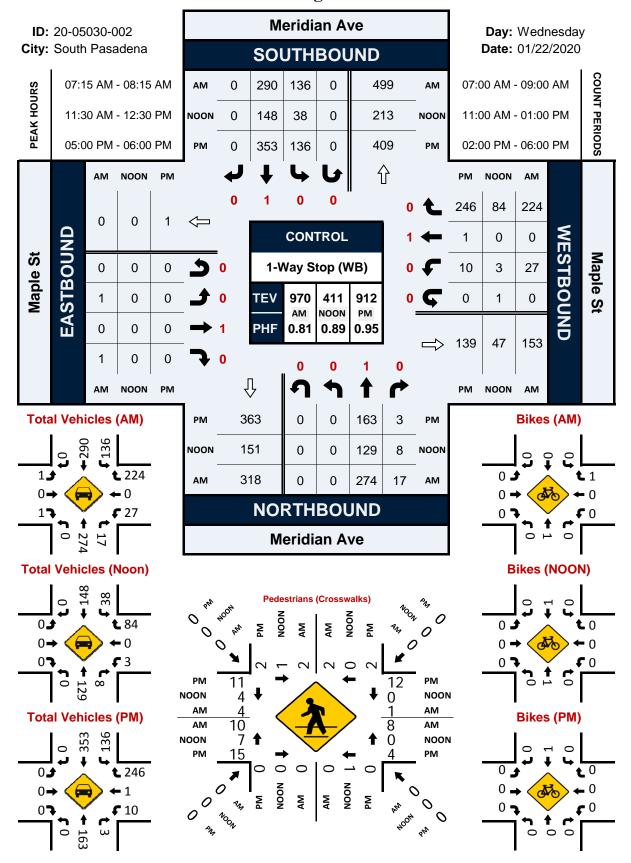
# Intersection Turning Movement Count City: South Pasadena Turning Movement Date: 1/22/2020

# **Pedestrians (Crosswalks)**

			Peac	estrians	(Crossw	aiks)			•
NS/EW Streets:	Meridi	an Ave	Merid	ian Ave	Мар	le St	Мар	le St	
A D 4	NORT	H LEG	SOUT	TH LEG	EAS <sup>-</sup>	Γ LEG	WES	Γ LEG	
AM	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	3	3
7:15 AM	0	0	0	0	0	0	3	0	3
7:30 AM	1	0	0	0	6	1	3	0	11
7:45 AM	1	0	0	0	0	0	3	1	5
8:00 AM	0	2	0	0	2	0	1	3	8
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	3	4
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES:	2	2	0	0	9	1	10	10	34
APPROACH %'s:	50.00%	50.00%			90.00%	10.00%	50.00%	50.00%	
PEAK HR:	07:15 AM	- 08:15 AM							TOTAL
PEAK HR VOL:	2	2	0	0	8	1	10	4	27
PEAK HR FACTOR :	0.500	0.250			0.333	0.250	0.833	0.333	0.444
	0.5	500			0.:	321	0.8	375	0.614
							-		
NOON	NORT	H LEG	SOUT	ΓH LEG	EAS <sup>-</sup>	Γ LEG	WES	ΓLEG	
NOON	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	2	0	0	0	1	1	1	0	5
11:15 AM	0	1	0	0	0	1	0	3	5
11:30 AM	1	0	0	0	0	0	5	0	6
11:45 AM	0	0	0	1	0	0	1	1	3
12:00 PM	0	0	0	0	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	1	2	3
12:30 PM	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	3	1	0	1	1	2	8	7	23
APPROACH %'s:	75.00%	25.00%	0.00%	100.00%	33.33%	66.67%	53.33%	46.67%	
PEAK HR:	11:30 AM	- 12:30 PM							TOTAL
PEAK HR VOL:	1	0	0	1	0	0	7	4	13
PEAK HR FACTOR :	0.250			0.250			0.350	0.500	0.542
	0.2	250	0.	250			0.5	550	0.542
-							-		
PM		H LEG		TH LEG		ΓLEG	WES <sup>-</sup>	ΓLEG	
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	2	0	0	2
2:15 PM	0	1	0	0	1	0	1	0	3
2:30 PM	0	0	0	0	0	0	1	1	2
2:45 PM	0	0	0	0	4	0	1	1	6
3:00 PM	1	0	0	0	1	3	1	2	8
3:15 PM	2	1	0	0	1	1	2	4	11
3:30 PM	1	0	0	0	1	4	2	0	8
3:45 PM	0	0	0	0	0	0	0	11	1
4:00 PM	0	0	0	0	0	1	4	1	6
4:15 PM	0	1	0	0	2	3	2	1	9
			_			_			8
4:30 PM	0	0	0	0	0	3	2	3	
4:45 PM	0 0	0 0	0	0	2	0	3	0	5
4:45 PM 5:00 PM	0 0 0	0 0 0	0	0	0	3	3 2	0 6	5 11
4:45 PM 5:00 PM 5:15 PM	0 0 0 0	0 0 0 1	0 0 0	0 0 0	2 0 0	0 3 4	3 2 5	0 6 1	5 11 11
4:45 PM 5:00 PM 5:15 PM 5:30 PM	0 0 0 0	0 0 0 1 0	0 0 0 0	0 0 0 0	2 0 0 3	0 3 4 0	3 2 5 5	0 6 1 3	5 11 11 11
4:45 PM 5:00 PM 5:15 PM	0 0 0 0	0 0 0 1	0 0 0	0 0 0	2 0 0	0 3 4	3 2 5	0 6 1	5 11 11
4:45 PM 5:00 PM 5:15 PM 5:30 PM	0 0 0 0 0 2	0 0 0 1 0	0 0 0 0	0 0 0 0 0	2 0 0 3 1	0 3 4 0 5	3 2 5 5 3	0 6 1 3 1	5 11 11 11 13
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 0 0 0 0 2	0 0 0 1 0 1	0 0 0 0 0	0 0 0 0 0	2 0 0 3 1	0 3 4 0 5	3 2 5 5 3 NB	0 6 1 3 1	5 11 11 11 13 TOTAL
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM	0 0 0 0 0 2 EB 6	0 0 0 1 0 1	0 0 0 0	0 0 0 0 0	2 0 0 3 1 NB 16	0 3 4 0 5 SB 29	3 2 5 5 3 NB 34	0 6 1 3 1	5 11 11 11 13
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM TOTAL VOLUMES: APPROACH %'s:	0 0 0 0 2 EB 6 54.55%	0 0 1 0 1 WB 5 45.45%	0 0 0 0 0	0 0 0 0 0	2 0 0 3 1	0 3 4 0 5	3 2 5 5 3 NB	0 6 1 3 1	5 11 11 11 13 TOTAL 115
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM TOTAL VOLUMES: APPROACH %'s:	0 0 0 0 2 EB 6 54.55%	0 0 0 1 0 1 WB 5 45.45%	0 0 0 0 0 0	0 0 0 0 0 0	2 0 0 3 1 NB 16 35.56%	0 3 4 0 5 SB 29 64.44%	3 2 5 5 3 NB 34 57.63%	0 6 1 3 1 SB 25 42.37%	5 11 11 11 13 TOTAL 115
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM TOTAL VOLUMES: APPROACH %'s: PEAK HR:	0 0 0 0 0 2 EB 6 54.55% 05:00 PM	0 0 0 1 0 1 1 WB 5 45.45%	0 0 0 0 0	0 0 0 0 0	2 0 0 3 1 NB 16 35.56%	0 3 4 0 5 SB 29 64.44%	3 2 5 5 3 NB 34 57.63%	0 6 1 3 1 SB 25 42.37%	5 11 11 11 13 TOTAL 115
4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:45 PM TOTAL VOLUMES: APPROACH %'s:	0 0 0 0 0 2 EB 6 54.55% <b>05:00 PM</b> 2 0.250	0 0 0 1 0 1 WB 5 45.45%	0 0 0 0 0 0	0 0 0 0 0 0	2 0 0 3 1 NB 16 35.56%	0 3 4 0 5 SB 29 64.44%	3 2 5 5 3 NB 34 57.63%	0 6 1 3 1 SB 25 42.37%	5 11 11 11 13 TOTAL 115

# Meridian Ave & Maple St

## **Peak Hour Turning Movement Count**



# **Intersection Turning Movement Count**

| Coation: Meridian Ave & Pine St City: South Pasadena Control: 1-Way Stop (WB) | City: Meridian Ave & Pine St City: South Pasadena | City: South Pasadena

-									tal								
NS/EW Streets:		Meridian	n Ave			Meridian Ave Pine St Pine St											
		NORTHE	BOUND			SOUTH	BOUND			FASTI	BOUND			WESTB	OUND		
AM	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
7:00 AM	0	69	2	0	1	69	0	0	0	0	0	0	2	0	9	0	152
7:15 AM	0	128	2	0	0	65	0	0	0	0	0	0	0	0	9	0	204
7:30 AM	0	160	1	0	4	84	0	0	0	0	0	0	2	0	10	0	261
7:45 AM 8:00 AM	0	155 85	4 5	0	12 8	119 121	0	0	0	0	0	0	12 11	0	23 10	0	325 240
8:15 AM	0	75	8	0	18	96	0	0	0	0	0	0	0	0	9	0	206
8:30 AM	0	111	2	0	7	73	0	0	0	0	0	0	3	0	12	0	208
8:45 AM	0	84	1	0	7	69	0	0	0	0	0	0	0	0	10	0	171
	NL 0	NT 867	NR 25	NU	SL 57	ST	SR 0	SU	EL 0	ET 0	ER	EU	WL	WT	WR 92	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0.00%	97.20%	2.80%	0 0.00%	7.57%	696 92.43%	0.00%	0 0.00%	U	U	0	0	30 24.59%	0 0.00%	75.41%	0 0.00%	1767
PEAK HR :		7:30 AM - (		0.0070	7.0770	72.1070	0.0070	0.0070					21.0770	0.0070	70.1170	0.0070	TOTAL
PEAK HR VOL :	0	475	18	0	42	420	0	0	0	0	0	0	25	0	52	0	1032
PEAK HR FACTOR :	0.000	0.742	0.563	0.000	0.583	0.868	0.000	0.000	0.000	0.000	0.000	0.000	0.521	0.000	0.565	0.000	0.794
		0.76	16			0.88	12							0.55	50		0.771
NOON		NORTHE				SOUTH					BOUND			WESTB			
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM	0	46	1	0	1	40	0	1	0	0	0	0	0	0	4	0	93
11:15 AM 11:30 AM	0	46 45	3 0	0	3	40 50	0	0	0	0	0	0	2	0	5 9	0	99 109
11:30 AM 11:45 AM	0	45 59	1	0	3	43	0	0	0	0	0	0	2	0	7	0	115
12:00 PM	0	49	2	0	2	35	0	0	0	0	0	0	0	0	3	0	91
12:15 PM	0	61	0	0	2	54	0	0	0	0	0	0	0	0	5	0	122
12:30 PM	0	47	3	0	1	46	0	0	0	0	0	0	2	0	6	0	105
12:45 PM	0	52	1	0	6	50	0	0	0	0	0	0	1	0	6	0	116
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	405	11	0	21	358	0	1	0	0	0	0	9	0	45	0	850
APPROACH %'s : PEAK HR :	0.00%	97.36% 11:30 AM -	2.64%	0.00%	5.53%	94.21%	0.00%	0.26%					16.67%	0.00%	83.33%	0.00%	TOTAL
PEAK HR VOL :	0	214	3	0	10	182	0	0	0	0	0	0	4	0	24	0	437
PEAK HR FACTOR :	0.000				0.833	0.843						0.000		0			
		0.877	0.375	0.000	0.833	0.843	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.667	0.000	
		0.877 0.88		0.000	0.833	0.843		0.000	0.000	0.000	0.000	0.000	0.500	0.000		0.000	0.895
			19	0.000	0.833		i7	0.000	0.000		0.000 BOUND	0.000	0.500		36	0.000	0.895
PM	0	0.88 NORTHE	BOUND 0	0	0	SOUTHE 1	BOUND 0	0	0	EASTI 0	BOUND 0	0	0	0.63 WESTB	BOUND 0	0	
	NL	0.88 NORTHE 1 NT	BOUND	O NU	0 SL	SOUTHE 1 ST	BOUND 0 SR	O SU	0 EL	EASTI 0 ET	BOUND 0 ER	O EU	0 WL	0.63 WESTB 1 WT	BOUND 0 WR	0 WU	TOTAL
2:00 PM	NL 0	0.88 NORTHE 1 NT 50	BOUND 0 NR 1	0 NU 0	0 SL 3	0.85 SOUTHI 1 ST 56	BOUND 0 SR 0	0 SU 0	0 EL 0	EASTI 0 ET 0	BOUND 0 ER 0	0 EU 0	0 WL 4	0.63 WESTB 1 WT	BOUND 0 WR 13	0 WU 0	TOTAL 127
	NL	0.88 NORTHE 1 NT	BOUND 0	O NU	0 SL	SOUTHE 1 ST	BOUND 0 SR	O SU	0 EL	EASTI 0 ET	BOUND 0 ER	O EU	0 WL	0.63 WESTB 1 WT	BOUND 0 WR	0 WU	TOTAL
2:00 PM 2:15 PM 2:30 PM 2:45 PM	NL 0 0 0 0	0.88 NORTHE 1 NT 50 55 74 94	BOUND 0 NR 1 2 0 5	0 NU 0 0	0 SL 3 2 6 7	0.85 SOUTHE 1 ST 56 69 56 73	80UND 0 SR 0 0	0 SU 0 0 0	0 EL 0 0 0	EASTI 0 ET 0 0 0	BOUND 0 ER 0 0 0	0 EU 0 0 0	0 WL 4 5 1	0.63 WESTB 1 WT 0 0 0	36 SOUND 0 WR 13 6 11 13	0 WU 0 0 0	TOTAL 127 139 148 199
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM	NL 0 0 0 0	0.88  NORTHE  1  NT  50  55  74  94  78	BOUND 0 NR 1 2 0 5 6	0 NU 0 0 0	0 SL 3 2 6 7	0.85 SOUTHI 1 ST 56 69 56 73 82	80UND 0 SR 0 0 0	0 SU 0 0 0	0 EL 0 0 0	EASTI 0 ET 0 0 0	BOUND 0 ER 0 0 0	0 EU 0 0 0	0 WL 4 5 1 7	0.63 WESTB 1 WT 0 0 0 0 0	36 SOUND 0 WR 13 6 11 13 6	0 WU 0 0 0	TOTAL 127 139 148 199 182
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:15 PM	NL 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61	BOUND 0 NR 1 2 0 5 6 1	0 NU 0 0 0 0	0 SL 3 2 6 7 5 7	0.85 SOUTHE 1 ST 56 69 56 73 82 93	80UND 0 SR 0 0 0 0	0 SU 0 0 0 0	0 EL 0 0 0 0	EASTI 0 ET 0 0 0 0	BOUND 0 ER 0 0 0 0 0	0 EU 0 0 0 0	0 WL 4 5 1 7 5 0	0.63 WESTB 1 WT 0 0 0 0 0	36 SOUND 0 WR 13 6 11 13 6 15	0 WU 0 0 0	TOTAL 127 139 148 199 182 177
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM	NL 0 0 0 0	0.88  NORTHE  1  NT  50  55  74  94  78	BOUND 0 NR 1 2 0 5 6	0 NU 0 0 0	0 SL 3 2 6 7	0.85 SOUTHI 1 ST 56 69 56 73 82	80UND 0 SR 0 0 0	0 SU 0 0 0	0 EL 0 0 0	EASTI 0 ET 0 0 0	BOUND 0 ER 0 0 0	0 EU 0 0 0	0 WL 4 5 1 7	0.63 WESTB 1 WT 0 0 0 0 0	36 SOUND 0 WR 13 6 11 13 6	0 WU 0 0 0	TOTAL 127 139 148 199 182
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:15 PM 3:30 PM 3:45 PM 4:00 PM	NL 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61 62 75 74	BOUND 0 NR 1 2 0 5 6 1 2 1	0 NU 0 0 0 0 0	0 SL 3 2 6 7 5 7	0.85 SOUTHI 1 ST 56 69 56 73 82 93 68 94	37 30UND 0 SR 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0	0 EL 0 0 0 0 0	EASTI 0 ET 0 0 0 0	BOUND 0 ER 0 0 0 0 0	0 EU 0 0 0 0 0	0 WL 4 5 1 7 5 0	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0	36 BOUND 0 WR 13 6 11 13 6 15 6	0 WU 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:15 PM 3:45 PM 4:00 PM 4:15 PM	NL 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 78 61 62 75 74 93	BOUND 0 NR 1 2 0 5 6 1 2 1 2	0 NU 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4	0.85 SOUTHI 1 ST 56 69 56 73 82 93 93 68 94 95	80UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0	EASTI 0 ET 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0	36 30UND 0 WR 13 6 11 13 6 15 6 4 12 14	0 WU 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:15 PM 3:15 PM 3:30 PM 4:00 PM 4:15 PM 4:30 PM	NL 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61 62 75 74 93 90	30UND 0 NR 1 2 0 5 6 1 2 1 1 1 2 2 2	0 NU 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 3	0.85 SOUTHIE 1 ST 56 69 56 73 82 93 68 94 95 85	80UND 0	0 SU 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0	EASTI 0	30UND 0 ER 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 2 3 4	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	36 30UND 0 WR 13 6 11 13 6 15 6 4 12 14 5	0 WU 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:05 PM 3:45 PM 4:15 PM 4:30 PM 4:30 PM	NL 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 61 62 75 74 93 90 79	BOUND 0 NR 1 2 0 5 6 6 1 2 1 1 1 2 2 2 2 2	0 NU 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 4 3 9	0.85 SOUTHI 1 ST 56 69 73 82 93 68 94 95 85 92	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0	EASTI 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 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 2 3 4 2	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	336 30UND 0 WR 13 6 11 13 6 15 6 4 12 14 15 2	0 WU 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:15 PM 3:15 PM 3:30 PM 4:00 PM 4:15 PM 4:30 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61 62 75 74 93 90 79 104 106	BOUND 0 NR 1 2 0 5 6 1 2 1 1 2 2 2 0 5 5	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 3	0.85 SOUTHIE 1 ST 56 69 56 73 82 93 68 94 95 85	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0	EASTI 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0	0 WL 4 5 1 7 7 5 0 0 0 0 2 2 3 4 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	336 30UND 0 WR 13 6 11 13 6 4 12 14 5 2 12 8	0 WU 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:15 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 1 NT 50 55 74 94 78 61 62 75 74 93 90 104 106 104	BOUND 0 NR 1 2 0 5 6 1 1 2 2 2 2 0 5 5 2	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 7 5 7 6 3 6 4 3 9 5 5 111	0.85 SOUTHI 1 ST 56 69 56 73 82 93 93 93 94 95 95 142 120 121	80UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 0 2 2 3 4 4 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	336  300UND 0 WR 13 6 11 13 6 15 6 4 12 14 5 2 12 8 9	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253 252
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:00 PM 3:15 PM 3:30 PM 3:45 PM 4:15 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61 62 75 74 93 90 79 104 106	BOUND 0 NR 1 2 0 5 6 1 2 1 1 2 2 2 0 5 5	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 6 7 7 5 7 6 3 3 6 4 4 3 9 9 5 111	0.85 SOUTHI 1 ST 56 69 56 73 82 93 93 68 94 95 85 92 142	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 7 5 0 0 0 0 2 2 3 4 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	336 30UND 0 WR 13 6 11 13 6 4 12 14 5 2 12 8	0 WU 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253
2:00 PM 2:15 PM 2:30 PM 2:45 PM 3:00 PM 3:15 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 1 NT 50 55 74 94 78 61 62 75 74 93 90 104 106 104	BOUND 0 NR 1 2 0 5 6 1 1 2 2 2 2 0 5 5 2	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 7 5 7 6 3 6 4 3 9 5 5 111	0.85 SOUTHI 1 ST 56 69 56 73 82 93 93 93 94 95 95 142 120 121	80UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 0 2 2 3 4 4 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	336  300UND 0 WR 13 6 11 13 6 15 6 4 12 14 5 2 12 8 9	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253 252
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:00 PM 3:00 PM 3:15 PM 3:30 PM 4:15 PM 4:15 PM 4:15 PM 4:45 PM 5:00 PM 5:30 PM 5:30 PM 5:45 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 1 NT 50 55 74 94 78 61 62 75 74 93 90 79 104 106 104 102 NT 13301	30UND 0 NR 1 2 0 5 6 6 1 1 2 2 1 1 1 2 2 2 0 0 5 5 2 0 0 NR 32	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 4 3 9 5 111 13 8 8 SSL 8 SSC SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSC 8 SSc SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc Ssc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc 8 SSc Ssc 8 SSc Ssc 8 SSc Ssc 8 SSc Sc Ssc Ssc Sc Ssc Ssc Sc Ssc Ssc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc Sc	0.85 SOUTHII 1 ST 56 69 93 93 93 93 94 95 142 120 121 121 ST 1460	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 SU 2	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 2 2 3 4 4 2 2 3 3 3 2 2 WL	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 WT 0	36 SOUND 0 WR 13 6 11 13 6 15 6 4 12 14 5 2 11 WR 147	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253 252 244
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:00 PM 3:05 PM 3:45 PM 4:30 PM 4:15 PM 4:30 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:30 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 55 74 94 61 62 75 74 93 90 79 104 106 104 102  NT 1301 1301 97,60%	30UND 0 NR 1 2 0 5 6 1 1 2 2 1 1 2 2 0 0 5 5 2 0 0 NR 32 2.40%	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 3 9 9 5 11 11 8 8	0.85 SOUTHI 1 ST 56 69 56 67 73 82 93 68 89 94 95 85 142 120 121 121	37 30 30 30 30 30 30 30 30 30 30 30 30 30	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 7 5 0 0 0 0 2 2 3 3 4 4 2 2 3 3 3 3 2 2 WL	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	36 SOUND 0 WR 13 6 11 13 6 15 6 4 12 12 8 9 11 WR	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253 252 244 TOTAL 3084
2:00 PM 2:15 PM 2:30 PM 2:30 PM 2:30 PM 3:00 PM 3:00 PM 3:30 PM 3:30 PM 4:00 PM 4:15 PM 4:15 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 5:30 PM 5:45 PM 5:45 PM 5:45 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 74 94 78 61 62 75 74 93 90 79 104 106 104 102 NT 1301 1301 1301 15:00 PM 0	30UND 0 NR 1 2 0 5 6 6 1 1 2 2 1 1 1 2 2 2 0 0 5 2 0 0 NR 32 2 .40% 606:00 PM	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 4 3 9 5 11 11 13 8 SL 9 8 8 9 11 11 11 11 11 11 11 11 11 11 11 11 1	0.85 SOUTHH 1 1 5T 56 69 93 93 93 93 94 94 95 120 121 121 ST 1460 93.59%	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0	BOUND 0 0 FR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 2 2 3 4 2 2 3 3 3 2 2 WL 44 23.04%	0.63  WESTB 1  WT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	36 SOUND 0 WR 13 6 11 13 6 6 4 12 14 5 2 12 18 9 11 WR 147 76.96%	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 253 252 244  TOTAL 3084
2:00 PM 2:15 PM 2:30 PM 2:30 PM 3:00 PM 3:05 PM 3:45 PM 4:30 PM 4:15 PM 4:30 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:30 PM	NL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.88  NORTHE 1 NT 50 55 55 74 94 61 62 75 74 93 90 79 104 106 104 102  NT 1301 1301 97,60%	30UND 0 NR 1 2 0 5 6 1 1 2 2 1 1 2 2 0 0 5 5 2 0 0 NR 32 2.40%	0 NU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SL 3 2 6 7 5 7 6 3 6 4 4 3 9 5 111 13 8 8 SSL 8 SSC 8 SSC 8 SSC SSC SSC SSC SSC SSC S	0.85 SOUTHII 1 ST 56 69 93 93 93 93 94 95 142 120 121 121 ST 1460	30UND 0 SR 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 SU 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 SU 2	0 EL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	EASTI 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	BOUND 0 ER 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 EU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 WL 4 5 1 7 5 0 0 0 2 2 3 4 4 2 2 3 3 3 2 2 WL	0.63 WESTB 1 WT 0 0 0 0 0 0 0 0 0 0 0 WT 0	36 SOUND 0 WR 13 6 11 13 6 15 6 4 12 14 5 2 11 WR 147	0 WU 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOTAL 127 139 148 199 182 177 169 152 189 211 190 186 266 253 252 244 TOTAL 3084

# **Intersection Turning Movement Count**

Location: Meridian Ave & Pine St

City: Control:	South Pasa												P	roject ID:	20-05030- 1/22/2020		
	· way old	p (115)						Bil	ces					Duto.	172272020	·	
NS/EW Streets:		Meridia				Meridia					e St				e St		
AM	0	NORTH 1	IBOUND 0	0	0	SOUTH 1	BOUND 0	0	0	EAST 0	BOUND	0	0	WEST	BOUND	0	
7:00 AM	NL 0	NT 1	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT	WR 0	WU	TOTAL 1
7:15 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM 7:45 AM	0 0	1 1	0	0	0 0	0 0	0	0 0	0 0	0	0	0 0	0	0 0	0	0	1
8:00 AM 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 4	NR 1	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 5
APPROACH %'s : PEAK HR :	0.00%	80.00% 07:30 AM -	20.00%	0.00%													TOTAL
PEAK HR VOL :	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.000	0.500 0.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		NORTH	IBOUND			SOUTH	BOUND			EAST	BOUND			WEST	BOUND		
NOON	0 NL	1 NT	0 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	0 ET	0 ER	<mark>0</mark> EU	0 WL	1 WT	0 WR	0 WU	TOTAL
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:15 AM 11:30 AM	0 0	0	0 0	0 0	0 0	1 0	0	0 0	0 0	0	0	0 0	0	0	0 0	0 0	1 0
11:45 AM 12:00 PM	0	0	0	0	0	1 0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30 PM 12:45 PM	0	0 1	0	0	0 0	0	0 0	0	0 0	0	0	0	0	0	0	0	0 1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0 0.00%		0 0.00%	0 0.00%	0 0.00%	2 100.00%	0 0.00%	0 0.00%	0	0	0	0	0	0	0	0	5
PEAK HR : PEAK HR VOL :	0	11:30 AM -	0 12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	TOTAL 2
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.2				0.2											
PM	0	NORTH 1	IBOUND 0	0	0	SOUTH 1	BOUND 0	0	0	EAST 0	BOUND 0	0	0	WEST	BOUND 0	0	
2:00 PM	NL 0	NT 0	NR 0	NU 0	SL 0	ST 1	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 1
2:15 PM	0	0	0	0	0	0 1	0	0	0	0	0	0	0	0	0	0	0
2:30 PM 2:45 PM	0 0	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	1
3:00 PM 3:15 PM	0	0	0	0	0	2 0	0	0	0 0	0	0	0	0	0	0	0 0	2
3:30 PM 3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM 4:30 PM	0	0	0	0	0 0	0	0	0	0 0	0	0	0	0	0	0	0	0
4:45 PM 5:00 PM	0	1 0	1 0	0	0	11	0	0	0	0	0	0	0	0	0	0	3
5:15 PM	Ö	0	0	0	Ö	Ó	Ō	Ō	0	0	0	Ö	0	0	Ō	0	0
5:30 PM 5:45 PM	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
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES : APPROACH %'s :	0	2	1 33.33%	0	0.00%	6	0	0	0	0	0	0	0	0	0	0	9
PEAK HR :		05:00 PM -	06:00 PM														TOTAL
PEAK HR VOL : PEAK HR FACTOR :	0.00	0 0.000	0.000	0.000	0.000	1 0.250	0 0.000	0.000	0.000	0.000	0 0.000	0.000	0.000	0 0.000	0 0.000	0.000	1
						0.2											0.250

0 1 0 0 0.000 0.250 0.000 0.000 0.250

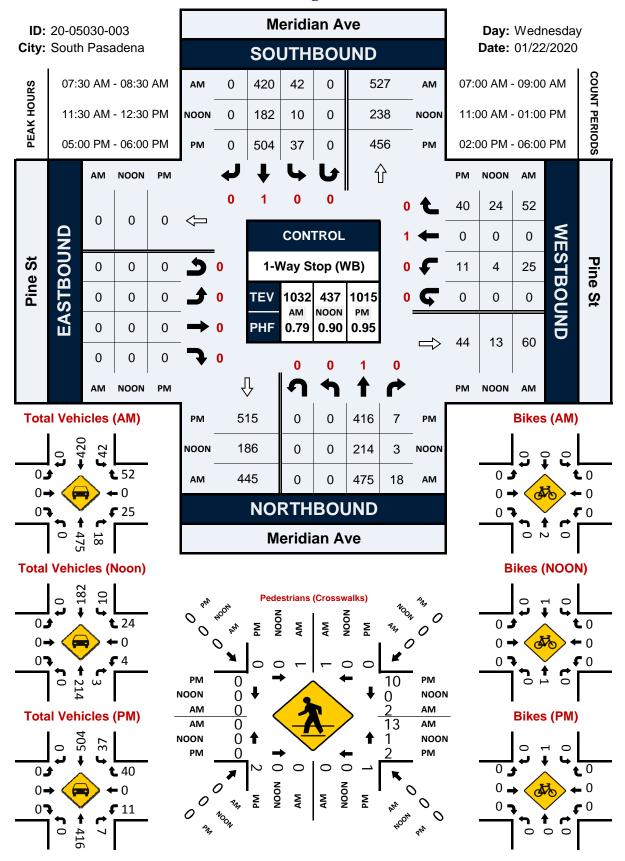
# Intersection Turning Movement Count City: South Pasadena Turning Movement Date: 1/22/2020

# Pedestrians (Crosswalks)

-			Pede	estrians	(Crossw	alks)			_
NS/EW Streets:	Meridi	ian Ave	Meridi	an Ave	Pin	e St	Pine	e St	
A B //	NORT	TH LEG	SOUT	'H LEG	EAST	Γ LEG	WEST	Γ LEG	
AM	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	1	0	0	0	2
7:30 AM	0	0	0	0	5	1	0	0	6
7:45 AM	1	1	0	0	4	0	0	0	6
8:00 AM 8:15 AM	0 0	0	0	0	3 1	0 1	0	0	3 2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	0	0	1	0	0	2
0.107111	Ü	•		· ·		•	Ŭ	· ·	_
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	1	3	0	0	14	3	0	0	21
APPROACH %'s:	25.00%	75.00%			82.35%	17.65%			
PEAK HR:	07:30 AM	- 08:30 AM							TOTAL
PEAK HR VOL :	1	1	0	0	13	2	0	0	17
PEAK HR FACTOR :	0.250	0.250			0.650	0.500			0.708
	0.	250			0.6	525			
	NODI	TH LEG	SOLIT.	'H LEG	EACT	T LEG	\\/ECT	Γ LEG	
NOON	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
11:00 AM	0	2	0	0	1	<u></u>	0	0	4
11:15 AM	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	1	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	1	1	0	0	2
12:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	2	0	0	3	2	0	0	7
APPROACH %'s:	0.00%	100.00%	_	-	60.00%	40.00%		-	•
PEAK HR:	11:30 AM	- 12:30 PM							TOTAL
PEAK HR VOL :	0	0	0	0	1	0	0	0	1
PEAK HR FACTOR :					0.250	250			0.250
					0.2	250			
	NORT	TH LEG	SOLIT	'H LEG	FAST	ΓLEG	WFS	ΓLEG	
PM	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
2:00 PM	0	0	0	0	0	1	0	0	1
2:15 PM	0	0	0	0	1	0	0	0	1
2:30 PM	0	0	0	0	0	0	0	0	0
2:45 PM	0	1	0	0	2	1	0	0	4
3:00 PM	0	2	0	3	5	5	0	0	15 10
3:15 PM 3:30 PM	0 0	2 0	0 1	0 0	2 2	6 0	0	0 0	10 3
3:30 PM 3:45 PM	0	0	0	0	0	0	0	0	0
4:00 PM	1	0	0	0	1	5	0	0	7
4:15 PM	0	Ö	0	0	1	1	0	0	2
4:30 PM	1	1	0	1	1	1	0	0	5
4:45 PM	0	1	0	0	1	2	0	0	4
5:00 PM	0	0	0	0	0	4	0	0	4
5:15 PM	0	0	0	0	1	1	0	0	2
5:30 PM	0	0	0	1 0	1 0	5 0	0	0	7 2
5:45 PM	0	U	2	U	U	U	0	U	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	7	3	5	18	32	0	0	67
APPROACH %'s:	22.22%	77.78%	37.50%	62.50%	36.00%	64.00%			
PEAK HR :	05:00 PM	- 06:00 PM							TOTAL
PEAK HR VOL :	0	0	2	1	2	10	0	0	15
PEAK HR FACTOR :			0.250	0.250	0.500	0.500			0.536
			0 '	375	0.1	500			0.000

## Meridian Ave & Pine St

# **Peak Hour Turning Movement Count**



# **ATTACHMENT 1**

Peer Review - Interwest



## **MEMORANDUM**

Mr. Shahid Abbas, Public Works Director

City of South Pasadena

## Re: Meridian Avenue Stop Analysis

Mr. Abbas

Per your direction, I conducted a peer review of the Stop Analysis conducted by W.G. Zimmerman Engineering, Inc. dated May 6, 2020 for Meridian Avenue at Oak Street, Pine Street, and Maple Street.

My review consisted of field conditions, vehicular and non-vehicular traffic operation on Meridian Avenue and side streets including turning movements and site conditions at three intersections. My conclusions did not change the findings of the Meridian Avenue Stop Analysis.

Regards,

Mike Bagheri, P.E.

Interwest Group

# **ATTACHMENT 1**

Miller Report

## Traffic Engineering / Transportation Planning

April 13, 2021

Mr. Sean Joyce City Manager City of South Pasadena 1414 Mission Street South Pasadena, CA 91030

Subject: Review and Evaluate Traffic Control needs on Meridian Avenue

Dear Sean;

I am pleased to provide this report regarding a review and evaluation of stop sign warrants or other potential traffic controls for Meridian Avenue at Oak Street, Pine Street, Maple Street and along the Meridian corridor.

## Background

The City previously requested a review of the study area and intersections to see if they met the warrants for all-way stop control or other improvements. The previous studies indicated that the traffic levels were not high enough to meet National and State recommended values. The purpose of this report is to review the findings of the previous analyses and determine whether additional traffic controls may be appropriate.

The traffic information collected for the previous studies appears to be valid based upon my observations of the study area. Traffic volumes are typically 10% lower at this time based upon the continuing effects of the Covid pandemic, but this differential is not significant enough to affect recommendations.

## Basis of Recommendations

The California Manual on Uniform Traffic Control Devices (MUTCD) establishes standards and guidance for use of traffic controls on public roadways in California. Cities in California are legally required to be consistent with the MUTCD. Standards in the MUTCD are "shall" conditions and are rarely violated except in unique circumstances. Standards include the red color and octagonal shape of stop signs. MUTCD guidelines are "Should" statements and provide some flexibility. The criteria in the MUTCD to determine whether locations are appropriate for all-way stop signs are guidelines. This allows some flexibility in placement of all-way stops on local streets within neighborhoods, but an engineering study is always advised when determining whether to follow a guideline.

I am considered an expert on the MUTCD. I teach classes to professionals on its use for the University of California Institute for Transportation Studies, and I am a voting member of the National Committee on Uniform Traffic Control Devices, a group that advises the Federal Highway Administration on the Federal Version of the MUTCD, the parent document of the California MUTCD. In these roles, I am familiar with the past, present, and probable future changes in the two Manuals.

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## **Prior Studies**

The City recently conducted two analyses in the area. The May 2020 study of Meridian Avenue evaluated three potential all-way stop locations following strict consistency with the numerical guidelines in the MUTCD. The study concluded that none of the locations met the numerical criteria, generally known as "warrants", based upon traffic volumes, crash history, and speeds. This conclusion is technically correct, but the study did not consider whether any conditions might be apparent to consider recommendation of traffic controls that did not meet numerical the warrants in the MUTCD. The March 2021 study confirmed the conclusions of the May 2020 study.

## Additional MUTCD Criteria

The current edition of the California MUTCD provides additional criteria for consideration in the potential use of all-way stop controls. The initial paragraph addressing their potential use is as follows:

"Multi-way stop control can be useful as a safety measure at intersections if certain traffic conditions exist. Safety concerns associated with multi-way stops include pedestrians, bicyclists, and all road users expecting other road users to stop. Multi-way stop control is used where the volume of traffic on the intersecting roads is approximately equal."

After its presentation of vehicle volume, speed and crash criteria, the California MUTCD provides these additional options that can help to determine whether an all-way stop is appropriate, as follows:

"Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts;
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian. volumes:
- c. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop; and
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection."

The California MUTCD clearly allows some flexibility as indicated above in applying its guidelines for consideration of all-way stop controls. Rigidly following the numerical guidelines in the MUTCD is most appropriate for higher volume locations where traffic signalization may be more appropriate, but MUTCD guidelines offer language to allow for flexibility for neighborhoods and local residential streets.

A popular misuse of all-way stop signs is for speed control, and the warrants are structured more to discourage random application of all-way stops if speed reduction is the goal. Before and after studies often find that speeds have increased slightly away from or between new all-way stop intersections. Noise, congestion, and fumes can increase near stop-controlled intersections. It is important to recognize that reduction of vehicle speeds may not be a great justification to install stop signs.

Ultimately, it is more important for the City to affirm an engineering recommendation to deviate from the numerical MUTCD warrants than to strictly follow them in a neighborhood scenario. If a City chooses to install a multiway stop, it is perhaps more important to consider the precedent and how it

## Traffic Engineering / Transportation Planning

might apply to other intersections in the City. Many cities, including Los Angeles and Alhambra have established alternate warrant systems for use of stop signs in neighborhoods. For example, Los Angeles has established a policy to allow all-way stop controls at nearly every 4-way intersection in the City that is not located along an arterial through route. These tend to reduce through traffic and alleviate sight distance visibility issues at intersections, since all traffic will be slowing. The action requires 10's of thousands of stop signs, but it has likely improved overall safety levels within neighborhoods.

## Meridian Avenue Analysis

I have reviewed the traffic information and the local site conditions for each potential location along Meridian Avenue. In addition to the traffic volume information in the 2020 study, I reviewed the local conditions for each intersection and determined whether there are unrecognized advantages and unique circumstances at each intersection that might affect a final decision.

Meridian Avenue carries approximately 8000 vehicles per day. At this volume there can be challenges for crossing pedestrians and entering traffic at intersections. Motorists and pedestrians using cross streets will need to observe 6-7-second traffic gaps to turn onto or walk across the street. This suggests that sight distance of 250-300 feet is desirable especially at marked crosswalks. New stop signs generally will not result in extensive congestion at the existing traffic level of Meridian Avenue, if applied at intersections where cross traffic volume is lower than on Meridian. Also, traffic levels are unlikely to increase in the future to the range where traffic signals would ever be required.

#### Oak Street

Oak Street terminates at Meridian Avenue, but it continues to the east as a community collector, with an all-way stop at Ramona and traffic signals at Fremont and Fair Oaks.

Oak and Meridian meet at an acute angle, making it difficult to observe southbound traffic. Meridian is curving on the southbound approach and through the intersection. The skewed angle also increases the time required to make a left turn from Oak Street, requiring greater visibility of southbound traffic. The visibility from Oak Street to observe southbound traffic on Meridian is also limited by a hedge that is growing directly behind the sidewalk and by a utility pole. The sidewalk does not meet ADA width criteria at the utility pole.

A school crosswalk is located relatively far south from the center of the intersection because of the skewed angle. It is used by over 20 pedestrians in the AM peak hour, and use is likely related to nearby schools. The crosswalk also averages 15 or more pedestrians per hour from 2 pm to 5 pm, which likely includes both school and general neighborhood pedestrian traffic.

Based upon the unique intersection geometrics, the marked crosswalk, and the street usage further to the east, there is ample justification to conclude that all-way stops are appropriate for this location. Due to the unique geometrics, I would recommend that a plan be prepared to clearly indicate how to install the all-way stops and treat the crosswalk.

As a future consideration, I would study how the location could be improved to address ADA deficiencies and to allow relocation of the south crosswalk closer to the intersection or perhaps to the north leg. This would require street construction to widen the sidewalk into the street on the east side

## Traffic Engineering / Transportation Planning

to the north and move the curb toward the street to reduce the paved area on the southeast quadrant to "square off" the Oak Street approach. It would probably be in the \$30-50,000 range.

#### Pine Street

Pine Street terminates at Meridian Avenue and continues to the east. It is wider than the other streets in the area, but it does not likely carry a large proportion of though traffic. There are no marked crosswalks at or near the intersection. Meridian Avenue has an unusual design on both sides of the intersection, because water is carried in a concrete gutter down the center of the street rather than along the curbs. This can affect how drivers use the street, and the appearance may help to reduce speeds.

Meridian Avenue curves south of Pine Street, limiting the visibility from Pine Street to observe northbound Meridian northbound traffic. The visibility is approximately 250 feet if no cars are parked and can be further limited by parked cars, trees, and a utility box. Some red curb has been added recently to the east curb north and south of the intersection, but the red curbing is not long enough to fully clear sight distance.

Traffic levels on Pine Street are much lower than levels on Oak and Maple Streets at their intersections with Meridian. Of the three locations, Pine Street has the fewest distinguishing factors for providing an all-way stop. Potential limitations to sight distance are perhaps the strongest justifying factor, and the drainage treatment along Pine Street makes the intersection unique. But if stops are approved at all three locations, there could be concerns raised about excessive stops within a short distance. Among other factors, being the middle intersection of the three, it would be the lowest priority.

There would likely be no large consequential issues if an all-way stop was provided at this intersection, but it may require more enforcement because of the low cross traffic volumes. If all way stop controls are not provided, lengthening of the red curb along the east side of Meridian to at least 30 feet north and south of the intersection would be advised. If all-way stops are added, the red curb would not require adjustment.

## Maple Street

Maple Street terminates at Meridian Avenue and continues east across Huntington Drive for one block. There is a marked school crosswalk across the north leg. Maple intersects at a slight angle but not enough to affect turning vehicles. The traffic counts identified a high flow of traffic that turns right from westbound Maple to northbound Meridian, over 200 vehicles in both the AM and the PM peak hours. The corresponding left turn from Meridian is also high, nearly 150 vehicles in AM and PM peak hours. Sight distance visibility is good if no cars are parked along the east curb of Meridian, but a longer red curb prohibition would be required than what exists to provide better sight distance especially for pedestrians.

The traffic flow requirements are closer to meeting MUTCD guidelines at this intersection than at the other two intersections, and the location clearly meets the MUTCD criteria of two nearly equal residential streets. The high turning volume, sight distance limitations of parked cars, and the marked crosswalk are suitable special justification to consider an all-way stop at the location.

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If the City decides not to pursue an all-way stop, additional red curb would be recommended on the east side of Meridian north and south of the intersection so that parking was prohibited for at least 30 feet. In addition, the school crosswalk on the north leg should have PED XING signs and more visible school area signs and markings at the crosswalk and in advance.

## Conclusions

There are clear and unique factors at the Oak street and Maple Street intersections that would justify provision of all way stop controls based upon options in the California MUTCD. I can support a recommendation to change the controls at these intersections.

There are less evident special conditions at the Pine Street intersection. I would not criticize a decision by the city to install all-way stop controls at this location also, but the location does not appear to have unique factors or special justification that is found at the other two locations. I would prefer to advise the City of the merits and consequences of adding stop signs at the location and allow them to reach their decision, which would likely benefit from public input.

Please contact me if you have any questions.

Com Thele

Sincerely,

Rock Miller, P.E.

Consulting Traffic Engineer