



TECHNICAL MEMORANDUM

Date: November 4, 2019

To: Jessy Pu, Town of Los Gatos

From: Chris D. Kinzel, P.E.
Vice President

Subject: **16 Chestnut Driveway Analysis**

TJKM has been retained to conduct an analysis of the residential driveway serving the single family residence and guest house located at 16 Chestnut Avenue at its intersection with Hernandez Avenue. The resident has requested approval to demolish the existing home constructed in 1910 and replace it with a new home at about the same location on the 17,000 square foot lot. The resident proposes to retain the existing driveway, which enters the intersection of Chestnut Avenue and Hernandez Avenue diagonally. The intersection is a T-shaped intersection in which Chestnut Avenue tees into Hernandez Avenue. The intersection is controlled with stop signs on all three approaches. The driveway that enters the intersection is 12 feet wide, both existing and proposed.

The Town objects to the retention of the driveway entering the intersection since Town of Los Gatos Street Design Standard 2.21 requires a distance of at least 50 feet between an intersection and the nearest driveway. From a practical standpoint this would require the driveway to be relocated about 50 feet from the intersection onto Chestnut Avenue. The Town also raised the issue of pedestrian safety related to a driveway entering directly into an intersection. It is further noted that Town standards require a minimum driveway width of 14 feet and an angle of intersection as close to 90 degrees as possible but no less than 75 degrees. At 16 Chestnut Avenue the proposed driveway is 12 feet wide and the angle of intersection with both streets is only about 30 degrees. This is because on the north side, the angle of intersection of Chestnut Avenue and Hernandez Avenue is approximately 60 degrees and the existing driveway approximately equally bisects the angle of the intersection. The resident has requested that the Town obtain this traffic study to investigate where the driveway should be placed.

Existing Conditions

Previous collision history: Based on a review of the Statewide Integrated Traffic Records System (SWITRS), TJKM found that there have been no reported traffic collisions at this intersection in the past five years. The nearest collision was a DUI on Wissahickon Avenue, 270 feet south of Hernandez Avenue, in 2017.



Traffic Counts: TJKM conducted peak hour turning movement counts at this intersection on October 15, 2019 from 7 to 9 a.m. and 4 to 6 p.m. The counts, along with level of service (LOS) calculations, are included in Appendix A. Based on these counts, TJKM estimates the following daily traffic counts: Hernandez east of Chestnut – 945 vehicles per day (vpd), Hernandez west of Chestnut – 720 vpd, Chestnut south of Hernandez – 475 vehicles per day. During both peak hours, the intersection operates at LOS A.

During the a.m. peak hour there were five pedestrians and two bicyclists using the intersection; in the p.m. peak hour there were two pedestrians and two bicyclists using the intersection.

Roadway and Intersection Characteristics: The roadway characteristics near 16 Chestnut Avenue are similar to those of the immediate neighborhood – there are no continuous curbs, sidewalks or other walkways. Some properties have a clear shoulder area along their frontage that is suitable for pedestrians, however these areas are also suitable for parallel parked vehicles and are primarily used for that purpose. In some cases, adjacent properties have no walking or parking areas due to vegetation growing to the edge of pavement.

Chestnut Avenue has a prevailing pavement width of about 24 feet, Hernandez to the east has about 30 to 36 feet of pavement width, and Hernandez to the west has as little as 18 feet of pavement in some areas.

Aside from the driveway in question there are a number of driveways in or near the intersection that are less than 50 feet from intersection. There are two driveways on the north side of Hernandez Avenue, one driveway on the south side of Hernandez Avenue, and one driveway on the east side of Chestnut Avenue. The two driveways on the north side of Hernandez Avenue permit motorists to enter the street in a forward direction while the other two driveways require motorists to enter the street in a backing motion.

For the driveway in question, the home that is being reconstructed will increase from 2,573 square feet to 3,729 square feet. An existing 822 square foot guest house will not change and also takes access from the single driveway serving the site. The existing home has a circular driveway that wraps around a 60 inch diameter oak tree. The circular driveway allows motorists to enter and exit the driveway in a forward direction. The current facility has no garage; the new home will have a three-car garage that is positioned to allow movements to and from the garage from the circular driveway. Motorists will continue to be able to enter and exit the site in a forward motion with no backing into the street required. In addition to the three car garage, there appears to be on-site parking for four additional vehicles.

The photos on the following pages illustrate roadway and driveway conditions at and near 16 Chestnut Avenue.



Photo 1 – This shows the existing driveway at 16 Chestnut. The house is in the rear. Two pillars define the driveway; 12 feet of pavement is available.



Photo 2: The same driveway looking from the inside of the property to the intersection. In the distance is the eastern section of Hernandez Avenue.



Photo 3: This is the approximate location of the driveway if it were placed about 50 feet from the intersection on the west side of Chestnut Avenue.



Photo 4: Looking south on Chestnut Avenue from the approximate location of the driveway if located 50 feet south of the intersection.



Photo 5: Looking north on Chestnut Avenue with 16 Chestnut located to the left. The gap in vegetation shows the approximate location of a driveway located 50 south of the intersection.



Photo 6: Looking west on Hernandez. The 16 Chestnut location is on the far left. The pickup is near a driveway in the intersection; a second driveway is in mid-photo opposite the painted STOP marking.



Photo 7: Looking north on Hernandez. The 16 Chestnut access is located on the right side of the photo. Driveway on left near fire hydrant requires backing into the street.



Photo 8: Looking east on Hernandez toward intersection. The vehicle on the right is parked near the guest house of 16 Chestnut.



Photo 9: Looking east on Hernandez toward intersection. 16 Chestnut is on the right; the driveway is between the two bushes on the right.



Photo 10: Looking north on Chestnut. The driveway is directly across the street from 16 Chestnut. This requires backing into the street.



Photo 11: Looking northwest on Chestnut. The Pillar shown is for the 16 Chestnut driveway.



Photo 12: Looking north on Chestnut into the intersection. The 16 Chestnut driveway is shown (in lighter color) on the left.



Proposed Site Plan and Alternative Plan

The drawings on the following page shows the proposed site plan. A second drawing, prepared by TJKM, shows an alternative plan that shifts the existing driveway approximately 50 feet to the south where it will be more compliant with Town standards. In addition to allowing for a 14 foot wide driveway instead of the current 12 feet, this configuration also creates a 90 degree connection with Chestnut Avenue, instead of the current approximately 30 degrees.

The Alternate Site Plan is conceptual in that has not considered grades or utilities or other factors. It is intended to demonstrate that a variation of the proposed plan can function on site with few changes. The plan allows those entering the site to have convenient access to the garage area by circling the center oak tree. The new driveway would require removal of more shrubbery than the proposed plan, resulting in the house having less landscape screening from Chestnut Avenue.

Discussion

Given the good traffic safety record of the intersection, the relative low traffic volumes in the area, the very low pedestrian and bicycle traffic and, most importantly, the current all way stop sign installation at the intersection, TJKM is of the opinion that the current driveway layout is acceptable.

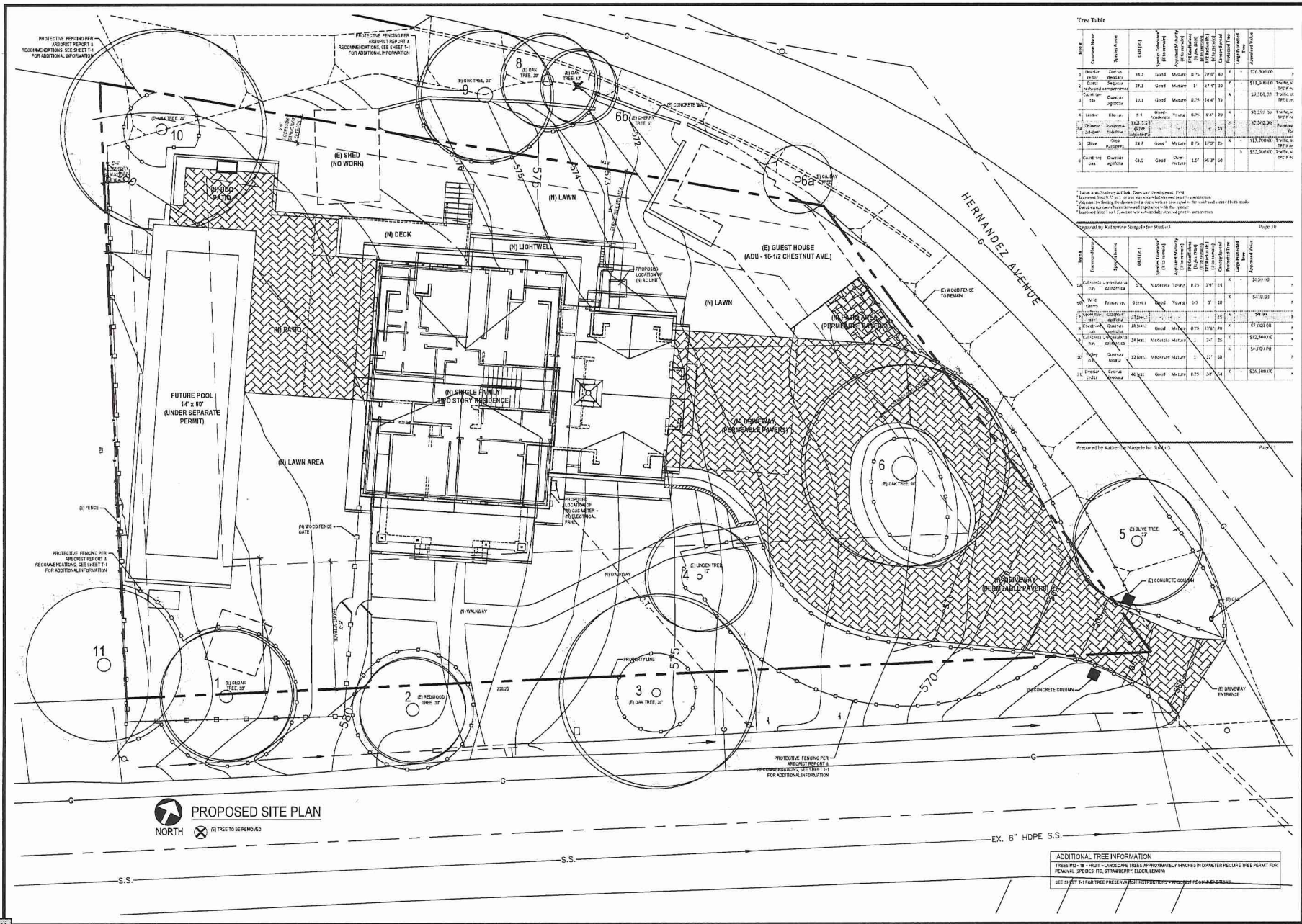
The alternative plan is also acceptable in that it meets the key Town standards and should continue to produce safe operations in the area.

The most direct way in and out of the neighborhood from 16 Chestnut Avenue is to and from the east on Hernandez Avenue. This is the simplest maneuver in and out of the diagonal driveway. Approaching from the east, a motorist would stop at the stop sign, make sure traffic is clear, and drive directly into the driveway. Leaving the site also is direct, especially given the presence of the all-way stops. TJKM is not aware of the exact route the current homeowners travel most frequently, but assume this one is important.

Since the applicants plan to continue to live in the upgraded home, no change in traffic conditions in the area should occur.



INTERIORS
RENDES-VOUS +
ADDITIONS
NEW CONSTRUCTION
658 UNIVERSITY AVE.
LOS GATOS
CALIFORNIA
95032
T 408.292.3252
F 252.399.1125



Tree Table

Tree #	Species Name	Species Code	DBH (in)	Height (ft)	Health	Measure	Cost	Notes
1	Cedar	37"	18.2	Good	Measure	0.75	29' x 10'	\$12,500.00
2	Redwood	37"	23.8	Good	Measure	1	12' x 11'	\$11,000.00
3	Oak	37"	13.3	Good	Measure	0.75	14' x 10'	\$12,500.00
4	Oak	37"	8.4	Good	Measure	0.75	6' x 7'	\$3,200.00
5	Olive	37"	14.3	Good	Measure	0.75	12' x 10'	\$12,500.00
6	Olive	37"	24.9	Good	Measure	0.75	17' x 12'	\$12,500.00
7	Olive	37"	43.5	Good	Measure	1.25	26' x 16'	\$32,500.00

Prepared by Katherine Stangor for Studio 3
Page 20

Tree #	Species Name	Species Code	DBH (in)	Height (ft)	Health	Measure	Cost	Notes
8	Olive	37"	8.75	Good	Measure	0.75	10' x 10'	\$5,000.00
9	Redwood	37"	15.5	Good	Measure	1	12' x 11'	\$11,000.00
10	Olive	37"	12.0	Good	Measure	0.75	12' x 10'	\$12,500.00
11	Olive	37"	24.0	Good	Measure	1	12' x 11'	\$11,000.00

Prepared by Katherine Stangor for Studio 3
Page 11

ADDITIONAL TREE INFORMATION
TREES #12 - 14 - FRUIT - LANDSCAPE TREES APPROXIMATELY 1/2" IN DBH REQUIRE TREE PERMIT FOR REMOVAL (LIFEZONES PRO, STRAWBERRY, ELDER, LEMON)
SEE SHEET 1-1 FOR TREE PRESENTATION INSTRUCTIONS FROM CALIFORNIA

THE CHESTNUT HOUSE
18 CHESTNUT AVENUE
LOS GATOS
CALIFORNIA
95030

A.P.N. 510-40-012

- 17 APRIL 2017
- 13 OCTOBER 2017
HPC SUBMITTAL
- 30 NOVEMBER 2017
PLANNING SUBMITTAL
- 13 JUNE 2018
HPC SUBMITTAL II
- 12 SEPTEMBER 2018
PLANNING SUBMITTAL II
- 17 DECEMBER 2018
PLANNING SUBMITTAL III
- 29 MARCH 2019
PLANNING SUBMITTAL IV

SCALE 1/8" = 1'-0"

PROPOSED SITE PLAN

A1.4

LANDS OF
ROPER
A.P.N. 510-40-012
17,606 S.F.
NEW RESIDENCE



Alternate Plan

50 Feet Minimum

Comparative Evaluation

In this section TJKM responds to points and questions raised by Town staff as they relate to the two optional driveway locations.

1. *Are pedestrians required to cross at intersections? How would that affect the two driveway locations, particularly the diagonal driveway?* In residential areas such as this, pedestrians can lawfully cross the street at intersections or anywhere else along a street between intersections. They just need to do so safely without walking in front of oncoming traffic. Pedestrian traffic is light, since most pedestrians must walk in the street. Auto traffic and pedestrians at either driveway location would have the same responsibilities to drive and walk carefully.
2. *How do Americans with Disability Act (ADA) requirements apply at the two locations?* The ADA was enacted in 1990 by Congress. As it relates to the 16 Chestnut Avenue situation, ADA prescribes standardized ways to treat crosswalks, sidewalks, curb depressions, etc. In this case it would only apply to the diagonal crosswalk since it is an intersection, and not the alternative driveway and its location. Normally, ADA compliance would include consistent connections with sidewalks near a crosswalk, with ramps leading from the sidewalk to the street at an acceptable grade, constructed with visual and tactile features so that sight-impaired pedestrians would know where the ramp ends and the street begins. These ramps would connect with marked or unmarked crosswalks leading to the other side of the street. At this 16 Chestnut Avenue location, there would be two ramps, one to cross Chestnut in an east-west crosswalk and one to cross Hernandez Avenue in a north-south direction.

To construct ADA-compliant ramps at this locations, the Town would presumably need to require the home owner to install concrete sidewalks, curbs and gutters, at least near the intersection likely requiring regrading of that portion of the lot and perhaps the street to obtain proper drainage along the street. It would be impossible to have both the diagonal crosswalk as proposed and the ADA-compliant ramps at the same intersection.

From a practical standpoint, there are no other ADA compliant curbs, gutters and sidewalks in the intersection or perhaps in the entire neighborhood. The two ramps described would lead to marked or unmarked crosswalks that connect across the street to, or very close to, other driveways and properties that would not seem to be able to become ADA-compliant without major improvements with major property disruptions. And, TJKM studies show that pedestrian traffic is low.

3. *In the absence of ADA-compliant facilities near the diagonal driveway, please describe what the pedestrian or ADA user may have to deal with standing in the middle of the*

driveway with their back to an exiting vehicle, conflicting with ADA requirements in terms of slope and landing area, possibly creating problems for the Town to improve in the future to achieve ADA compliance. Although this diagonal driveway is very rare and unusual, interactions between pedestrians and vehicles in a neighborhood setting are not unusual. In this case, with slow moving vehicles at an all-way stop intersection and infrequent conflicts with pedestrians, the safety issue would seem to be low. Elsewhere in many portions of the neighborhood, pedestrians must walk in the roadway. It appears unlikely that either the Town or especially the neighbors would consider making the area ADA compliant a high priority.

4. *Discuss the visibility exiting the diagonal driveway looking to the left considering the angle of the driveway and the driveway having higher elevation than Hernandez, as well as the roadway curve for eastbound Hernandez. A stop sign should not be considered as sight distance improvement.* If the all-way stop were not present, each of these factors would be very important. But the all-way stop sign installation at this intersection has an excellent safety record and is what makes the bad angle, elevation differential and a curve down the street non-issues. It is likely that because of general low traffic volumes, some motorists may use rolling stops at the intersections, but as is usually the case, rolling stops typically occur when there are no peds or vehicles and a full stop is not necessary from a safety standpoint.
5. *Provide recommendations of the American Association of State Transportation Officials (AASHTO) regarding driveways at intersections.* AASHTO standards do not deal directly with neighborhood streets, but AASHTO strongly supports clear sight distances near driveways. AASHTO discourages driveways to be located within the functional area of an intersection.

Recommendations

As noted in the discussion section and the Comparative Evaluation, a diagonal driveway as proposed would not normally be considered at a location such as this. And, the alternative location that would satisfy all of the Town's standards and concerns would likely perform at least as well. However, for the reasons described in the Discussion section, TJKM recommends that the Town allow the proposed driveway design, essentially continuing the current situation. The safety record is good, traffic and pedestrian volumes are low, and the presence of the all-way stop seems to mitigate all of the non-standard features of the driveway. TJKM does recommend that sight distance in the area be improved by removing vegetation near the driveway. As shown in Photo 1, there are small bushes near both decorative entry columns bordering and defining the driveway, which should be removed. In addition, there is a larger bush just to the south of the southern column that should also be considered for removal. In general, vegetation in this area should be kept clear of bushes with only tree trunks and ground cover allowed. This clear area should begin about 25 feet west of the large olive tree near the intersection and extend



TJKM

VISION THAT MOVES YOUR COMMUNITY

around the corner to about 50 feet south of the intersection. If such clear zones are established, this driveway's visibility would exceed many of those in the neighborhood.

If the driveway that meets the Town's standards is chosen, the area with reduced vegetation should extend about 25 feet (one car length) on either side of the new driveway.

TJKM considers that the retention of the existing driveway along with the recommended selective improvement of sight distance will result in a safe design.

Please contact me if there are questions on this matter.





VISION THAT MOVES YOUR COMMUNITY

APPENDIX A

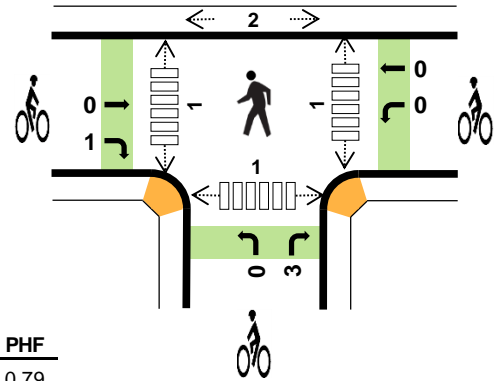
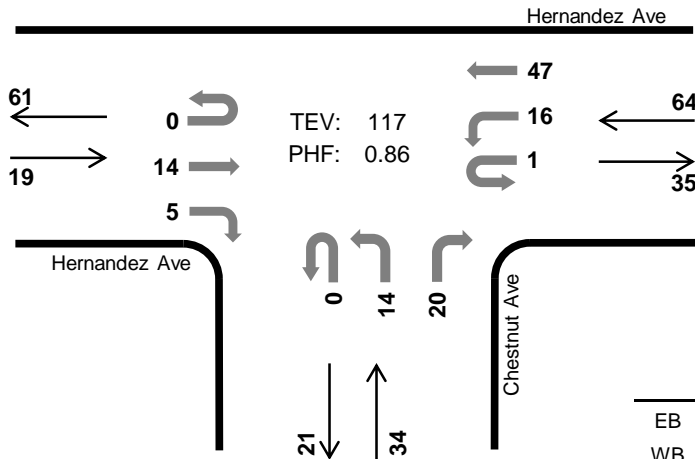
Existing Traffic Counts And Level of Service Calculations

Chestnut Ave Hernandez Ave



Peak Hour

Date: 10-15-2019
Count Period: 7:00 AM to 9:00 AM
Peak Hour: 7:30 AM to 8:30 AM



	HV %:	PHF
EB	0.0%	0.79
WB	1.6%	0.80
NB	2.9%	0.77
SB	-	-
TOTAL	1.7%	0.86

Two-Hour Count Summaries

Interval Start	Hernandez Ave				Hernandez Ave				Chestnut Ave				n/a				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT				
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
7:00 AM	0	0	1	0	0	2	4	0	0	2	0	2	0	0	0	0	11	0	
7:15 AM	0	0	3	0	0	3	7	0	0	4	0	2	0	0	0	0	19	0	
7:30 AM	0	0	5	1	0	3	12	0	0	5	0	4	0	0	0	0	30	0	
7:45 AM	0	0	3	1	0	2	10	0	0	5	0	6	0	0	0	0	27	87	
8:00 AM	0	0	3	2	0	3	17	0	0	2	0	7	0	0	0	0	34	110	
8:15 AM	0	0	3	1	1	8	8	0	0	2	0	3	0	0	0	0	26	117	
8:30 AM	0	0	0	0	0	4	5	0	0	2	0	3	0	0	0	0	14	101	
8:45 AM	0	0	1	1	0	5	5	0	0	3	0	7	0	0	0	0	22	96	
Count Total	0	0	19	6	1	30	68	0	0	25	0	34	0	0	0	0	183	0	
Peak Hour	All	0	0	14	5	1	16	47	0	0	14	0	20	0	0	0	0	117	0
	HV	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	0
	HV%	-	-	0%	0%	0%	6%	0%	-	-	0%	-	5%	-	-	-	-	2%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	1	1	0	2	1	0	1	0	2
7:30 AM	0	1	0	0	1	1	0	0	0	1	1	0	0	1	2
7:45 AM	0	0	1	0	1	0	0	3	0	3	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	2	0	3
8:15 AM	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
8:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Count Total	0	1	1	0	2	1	1	4	0	6	3	1	3	1	8
Peak Hr	0	1	1	0	2	1	0	3	0	4	1	1	2	1	5

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Hernandez Ave				Hernandez Ave				Chestnut Ave				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Peak Hour	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0

Two-Hour Count Summaries - Bikes

Interval Start	Hernandez Ave			Hernandez Ave			Chestnut Ave			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	1	0	1	0	0	0	0	0	0	2
7:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	3	0	0	0	0	3
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	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
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	1	0	1	0	1	0	3	0	0	0	0	6
Peak Hour	0	0	1	0	0	0	0	0	3	0	0	0	0	4

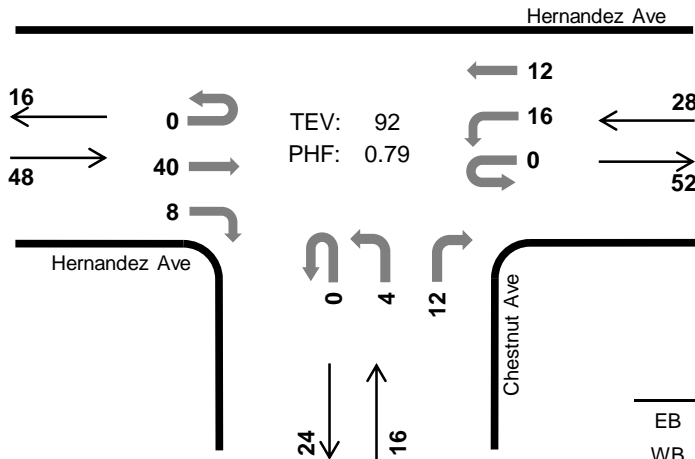
Note: U-Turn volumes for bikes are included in Left-Turn, if any.

Chestnut Ave Hernandez Ave

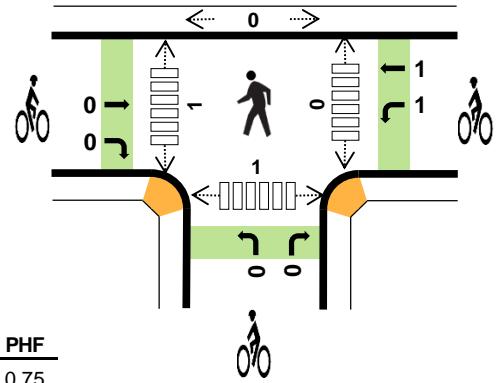


Peak Hour

Date: 10-15-2019
Count Period: 4:00 PM to 6:00 PM
Peak Hour: 4:00 PM to 5:00 PM



TEV: 92
PHF: 0.79



	HV %:	PHF
EB	0.0%	0.75
WB	0.0%	0.78
NB	0.0%	0.80
SB	-	-
TOTAL	0.0%	0.79

Two-Hour Count Summaries

Interval Start	Hernandez Ave				Hernandez Ave				Chestnut Ave				n/a				15-min Total	Rolling One Hour	
	Eastbound		Westbound		Northbound		Southbound		UT		LT		TH		RT				
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT			
4:00 PM	0	0	13	3	0	4	2	0	0	1	0	3	0	0	0	0	26	0	
4:15 PM	0	0	14	2	0	6	3	0	0	2	0	2	0	0	0	0	29	0	
4:30 PM	0	0	7	0	0	3	4	0	0	1	0	4	0	0	0	0	19	0	
4:45 PM	0	0	6	3	0	3	3	0	0	0	0	3	0	0	0	0	18	92	
5:00 PM	0	0	6	3	0	6	5	0	0	1	0	2	0	0	0	0	23	89	
5:15 PM	0	0	10	3	0	1	1	0	0	0	0	3	0	0	0	0	18	78	
5:30 PM	0	0	9	3	0	6	1	0	0	0	0	2	0	0	0	0	21	80	
5:45 PM	0	0	5	2	0	9	4	0	0	0	0	5	0	0	0	0	25	87	
Count Total	0	0	70	19	0	38	23	0	0	5	0	24	0	0	0	0	179	0	
Peak Hour	All	0	0	40	8	0	16	12	0	0	4	0	12	0	0	0	0	92	0
	HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HV%	-	-	0%	0%	-	0%	0%	-	-	0%	-	0%	-	-	-	-	0%	0

Note: Two-hour count summary volumes include heavy vehicles but exclude bicycles in overall count.

Interval Start	Heavy Vehicle Totals					Bicycles					Pedestrians (Crossing Leg)				
	EB	WB	NB	SB	Total	EB	WB	NB	SB	Total	East	West	North	South	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
5:00 PM	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
Count Total	0	0	0	0	0	1	3	1	0	5	1	1	0	1	3
Peak Hr	0	0	0	0	0	0	2	0	0	2	0	1	0	1	2

Two-Hour Count Summaries - Heavy Vehicles

Interval Start	Hernandez Ave				Hernandez Ave				Chestnut Ave				n/a				15-min Total	Rolling One Hour
	Eastbound				Westbound				Northbound				Southbound					
	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT	UT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Count Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Two-Hour Count Summaries - Bikes

Interval Start	Hernandez Ave			Hernandez Ave			Chestnut Ave			n/a			15-min Total	Rolling One Hour
	Eastbound			Westbound			Northbound			Southbound				
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	1	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	2
5:00 PM	0	0	1	0	0	0	0	0	1	0	0	0	2	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1	3
Count Total	0	0	1	2	1	0	0	0	1	0	0	0	5	0
Peak Hour	0	0	0	1	1	0	0	0	0	0	0	0	2	0

Note: U-Turn volumes for bikes are included in Left-Turn, if any.

HCM Unsignalized Intersection Capacity Analysis
 1: Chestnut Ave & Hernandez Ave

AM Peak
 10/22/2019



Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations	➔				➔	➔	
Sign Control	Stop				Stop	Stop	
Traffic Volume (vph)	14	5	1	16	47	14	20
Future Volume (vph)	14	5	1	16	47	14	20
Peak Hour Factor	0.79	0.79	0.80	0.80	0.80	0.77	0.77
Hourly flow rate (vph)	18	6	0	20	59	18	26

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	24	79	44
Volume Left (vph)	0	20	18
Volume Right (vph)	6	0	26
Hadj (s)	-0.15	0.08	-0.22
Departure Headway (s)	3.9	4.1	3.9
Degree Utilization, x	0.03	0.09	0.05
Capacity (veh/h)	899	864	890
Control Delay (s)	7.0	7.5	7.1
Approach Delay (s)	7.0	7.5	7.1
Approach LOS	A	A	A

Intersection Summary			
Delay		7.3	
Level of Service		A	
Intersection Capacity Utilization	20.4%		ICU Level of Service A
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	7.3
Intersection LOS	A

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	14	5	1	16	47	14	20
Future Vol, veh/h	14	5	1	16	47	14	20
Peak Hour Factor	0.79	0.79	0.80	0.80	0.80	0.77	0.77
Heavy Vehicles, %	0	0	2	2	2	3	3
Mvmt Flow	18	6	1	20	59	18	26
Number of Lanes	1	0	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7	7.5	7.1
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	41%	0%	25%
Vol Thru, %	0%	74%	75%
Vol Right, %	59%	26%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	34	19	64
LT Vol	14	0	16
Through Vol	0	14	48
RT Vol	20	5	0
Lane Flow Rate	44	24	80
Geometry Grp	1	1	1
Degree of Util (X)	0.047	0.026	0.091
Departure Headway (Hd)	3.859	3.879	4.08
Convergence, Y/N	Yes	Yes	Yes
Cap	922	921	879
Service Time	1.907	1.912	2.1
HCM Lane V/C Ratio	0.048	0.026	0.091
HCM Control Delay	7.1	7	7.5
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.1	0.3

HCM Unsignalized Intersection Capacity Analysis
 1: Chestnut Ave & Hernandez Ave

PM Peak
 10/22/2019



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↑	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	40	8	16	12	4	12
Future Volume (vph)	40	8	16	12	4	12
Peak Hour Factor	0.75	0.75	0.78	0.78	0.80	0.80
Hourly flow rate (vph)	53	11	21	15	5	15

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	64	36	20
Volume Left (vph)	0	21	5
Volume Right (vph)	11	0	15
Hadj (s)	-0.10	0.12	-0.40
Departure Headway (s)	3.9	4.1	3.7
Degree Utilization, x	0.07	0.04	0.02
Capacity (veh/h)	917	864	934
Control Delay (s)	7.2	7.3	6.8
Approach Delay (s)	7.2	7.3	6.8
Approach LOS	A	A	A

Intersection Summary			
Delay		7.1	
Level of Service		A	
Intersection Capacity Utilization	18.2%		ICU Level of Service A
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	7.2
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻			↻	↻	
Traffic Vol, veh/h	40	8	16	12	4	12
Future Vol, veh/h	40	8	16	12	4	12
Peak Hour Factor	0.75	0.75	0.78	0.78	0.80	0.80
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	11	21	15	5	15
Number of Lanes	1	0	0	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	1
HCM Control Delay	7.2	7.3	6.8
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	WBLn1
Vol Left, %	25%	0%	57%
Vol Thru, %	0%	83%	43%
Vol Right, %	75%	17%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	16	48	28
LT Vol	4	0	16
Through Vol	0	40	12
RT Vol	12	8	0
Lane Flow Rate	20	64	36
Geometry Grp	1	1	1
Degree of Util (X)	0.02	0.069	0.041
Departure Headway (Hd)	3.672	3.862	4.098
Convergence, Y/N	Yes	Yes	Yes
Cap	970	930	876
Service Time	1.712	1.874	2.112
HCM Lane V/C Ratio	0.021	0.069	0.041
HCM Control Delay	6.8	7.2	7.3
HCM Lane LOS	A	A	A
HCM 95th-tile Q	0.1	0.2	0.1

***This Page
Intentionally
Left Blank***