

## Appendix J: Traffic Supporting Information

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# Memorandum

Date: December 2024

To: City of Chico Department of Public Works

From: Sonia Anthoine and Ron Milam, Fehr & Peers

**Subject: Transportation Entitlement Review/Non-CEQA Intersection Operations Analysis for the Barber Yard Specific Plan – Updated**

RS22-4219

## Introduction & Background

This study addresses traffic operations associated with the Barber Yard Specific Plan (BYSP) project (proposed project) located in the City of Chico. Intersection operations under four scenarios are analyzed to determine compliance with the entitlement review requirements of the City. This technical memorandum documents the methodologies, inputs, and results of the analysis.

## Project Description

The BYSP Area is approximately 133 acres, located in the Barber Neighborhood within incorporated city limits at the southwestern-most side of Chico. The large BYSP Area is bounded by the Union Pacific Railroad (UPRR) mainline, Estes Road, Normal Avenue, and various individual city properties. **Figure 1** shows the location of the BYSP Area. <sup>1</sup>

The proposed project consists of the full buildout of the BYSP, including off-site improvements, resulting in a mixed-use community accommodating a diverse range of housing opportunities with a mix of commercial, and recreational/open space uses located throughout. For purposes of this analysis, the following proposed land uses have been assumed to ensure a conservative analysis:

- 530 detached single-family houses
- 107 attached single-family houses
- 613 multi-family apartment units
- A 130,000 square foot health/fitness club (i.e., indoor/outdoor athletic facility)
- 40,000 square feet of retail space

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<sup>1</sup> The project site consists, collectively, of the approximately 133-acre BYSP Area as well as the following approximately 16-acre offsite improvement area located adjacent to the BYSP Area. These off-site improvements would consist of a stormwater detention basin; various public utility connections, including, among others, an associated storm drain alignment and outfall at Comanche Creek in unincorporated Butte County; and various public roadway/bike path connections.



- 22,800 square feet of restaurant space
- A 17,200 square foot event center

Residential parking would be provided along all newly built local streets. The retail, food, and event center would be located near the center of the BYSP Area.

**Figure 2a** displays the proposed zoning of the BYSP Area. **Figure 2b** displays the access points to the proposed project. Primary access to the BYSP Area would be provided via extensions of the even-numbered streets between 14th Street and 20th Street, as well as Ivy Street.

## Study Area

The study area was selected based on the access to the BYSP Area and expected trip distribution throughout south Chico. The analysis considers traffic operations at the following intersections, which are displayed in **Figure 1**.

### Study Intersections

- |                                      |   |
|--------------------------------------|---|
| 1. W. 11th Street & Park Avenue      | 11. W. 18th Street & Park Avenue                  |
| 2. Ivy Street & W. 8th Street        | 12. W. 18th Street & Broadway                     |
| 3. Ivy Street & W. 9th Street        | 13. W. 18th Street & Normal Avenue                |
| 4. Ivy Street & W. 12th Street       | 14. E. 20th Street - W. 20th Street & Park Avenue |
| 5. W. 14th Street & Park Avenue      | 15. W. 20th Street & Normal Avenue                |
| 6. W. 14th Street & Broadway         | 16. W. 22nd Street & Park Avenue                  |
| 7. W. 14th Street & Chestnut Street  | 17. 22nd Street & Normal Avenue/Estes Road        |
| 8. W. 16th Street & Park Avenue      | 18. Park Avenue-Midway & E. Park Avenue           |
| 9. W. 16th Street & Broadway         | 19. E. 20th Street & SR 99 SB Ramps               |
| 10. W. 16th Street & Chestnut Street | 20. E. 20th Street & SR 99 NB Ramps               |

## Study Scenarios

The study intersections were evaluated for the following four scenarios:

- **Existing Conditions** – Analyzes operations as they exist in 2022, when the environmental analysis for the proposed project commenced.
- **Existing Plus Project Conditions** – Analyzes existing operations with the addition of trips generated by the proposed project. Version 1.2 of the BCAG RTP/SCS travel demand model was used to develop project trip distribution during the AM peak hour and PM peak hour.
- **Cumulative No Project Conditions** - Analyzes cumulative (2045) volumes based on Version 1.2 of the BCAG RTP/SCS travel demand model, assuming the BYSP Area remains in its current undeveloped state.
- **Cumulative Plus Project Conditions** – Analyzes cumulative year (2045) volumes with the addition of trips generated by the proposed project.



## Data Collection

### *Traffic Counts*

At the commencement of environmental analysis for the proposed project, traffic count data at all study intersections besides intersections #1 and #18 were ordered by the City of Chico and collected in May 2022 by Idax. Traffic count data for intersections #1 and #18 was ordered by Fehr & Peers and collected by NDS in September 2022. Intersection turning movement counts for both time periods were conducted during the AM (7:00 to 9:00) and PM (4:00 to 6:00) peak periods. Traffic counts at 11th Street / Park Avenue and Park Avenue-Midway/E. Park Avenue were reviewed for consistency and adjusted to ensure traffic flow conservation. **Appendix A** displays the existing intersection turning movement counts at the study intersections.

### *Roadway Pavement Condition*

Physical roadway conditions have the potential to influence safety, comfort, and aesthetic appeal. The following observations about existing physical roadway conditions were made during field visits in Summer 2022 and Fall 2023.

- Areas of decayed pavement (edges deteriorating into gravel shoulders) on local streets in the proposed project vicinity: W. 18th Street and W. 20th Street.
- Pavement in poor condition (e.g., alligator cracks) on local streets in the project vicinity: W. 16th Street, W. 18th Street, W. 20th Street from Park Avenue to the Barber Yard Plan Area and Broadway from 12th Street and 20th Street.
- Pavement in good condition along W. 22nd Street and Park Avenue (recently paved).

## Intersection Operations Analysis

This chapter describes the methodology and operational thresholds used to analyze the study intersections identified below, as well as methodology used to develop traffic forecasts.

### Level of Service Methodology

Study intersections were analyzed using procedures contained in the *Highway Capacity Manual (HCM) 7<sup>th</sup> Edition* (Transportation Research Board, 2022). These methodologies were applied using Synchro 11 software which considers traffic volumes, lane configurations, signal timings, signal coordination, and other pertinent parameters of intersection operations.

Level of Service (LOS) is a qualitative measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. In general, LOS A represents free-flow conditions with little to no congestion, and LOS F represents severe congestion with oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays. Typical factors that affect motorized vehicle LOS include speed, travel time, traffic interruptions, and freedom to maneuver. Empirical LOS criteria and methods of calculation have been documented in the HCM (Transportation Research Board, 2022).



For signalized intersections, roundabouts and all way stop control intersections, LOS is based on the average delay experienced by all vehicles passing through the intersection. For side-street stop-controlled intersections, the delay and LOS for the overall intersection is reported along with the delay for the worst-case movement (or shared movement/approach). **Table 1** displays the delay range associated with each LOS category for signalized and unsignalized intersections.

**Table 1: Intersection Level of Service (LOS) Criteria**

LOS	Description (for Signalized Intersections)	Average Delay (Seconds/Vehicle) at Signalized Intersections	Average Delay (Seconds/Vehicle) at Unsignalized Intersections
A	Operations with very low delay occurring with favorable traffic signal progression and/or short cycle lengths.	< 10.0	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0	> 10.0 to 15.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0	> 15.0 to 25.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0	> 25.0 to 35.0
E	Operations with high delay values indicating poor progression, and long cycle lengths. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0	> 35.0 to 50.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0	> 50.0
Note: LOS = level of service; V/C ratio = volume-to-capacity ratio Source: Highway Capacity Manual, 7 <sup>th</sup> Edition (Transportation Research Board, 2022)			

The analysis results for each scenario were compared against the Chico 2030 General Plan LOS performance expectations for each intersection.

*Policy CIRC-1.4 – Maintain LOS D or better for roadways and intersections at the peak PM period, except as specified below:*

- *LOS E is acceptable for City streets and intersections under the following circumstances:*
  - *Downtown streets within the boundaries identified in Figure DT-1 of the Downtown Element.*
  - *Arterials served by scheduled transit.*
  - *Arterials not served by scheduled transit, if bicycle and pedestrian facilities are provided within or adjacent to the roadway.*



- Utilize Caltrans LOS standards for Caltrans' facilities.
- There are no LOS standards for private roads.

LOS E would be acceptable on W. 8th Street, W. 9th Street, Park Avenue, and E. 20th Street in the study area because they are served by scheduled transit.

### *Synchro Limitations*

The Synchro program only analyzes vehicle intersection capacity and signal optimization at a macroscopic static level. Synchro typically inaccurately analyzes closely spaced intersections by inappropriately applying delays and queues to intersections most impacted rather than attributing to intersections causing the operational issues.

### *Synchro Bicycle & Pedestrian Considerations*

Current travel behavior in the existing residential neighborhood adjacent to the BYSP Area shows higher than California's average bicycle and walking commute trips (American Community Survey, U.S. Census Bureau, 2022). Consistent with HCM methodology, Synchro accounts for a variety of operational factors including bicycle and pedestrian crossing activity that compete for signalized intersection green time. Bicycles and pedestrians that conflict with permitted left or right turn vehicle movements are accounted for in intersection delay and LOS calculations.

## **Traffic Volume Forecasting**

Traffic volume forecasts for the Existing Plus Project and Cumulative (with and without Project) scenarios were developed using Version 1.2 of the BCAG RTP/SCS travel demand model. This version of the model is based on post-Camp Fire conditions and reflects updated population and employment growth forecasts for the BCAG region based on the redistribution effects of the fire. Several network changes were made to the existing "off-the-shelf" model in order to calibrate the model to current conditions, including lane and speed changes in the project vicinity.

The traffic forecasting adjustment procedure known as the difference method was used to develop Existing Plus Project and Cumulative (with and without Project) year traffic forecasts. For a given intersection, this forecasting procedure is calculated as follows for every movement:

<p><i>Existing Plus Project Forecast =</i></p> <p><i>Existing Volume + (Base Year Plus Project Model Volume – Base Year Model Volume)</i></p>
<p><i>Cumulative No Project Forecast =</i></p> <p><i>Existing Volume + (Cumulative Year Model Volume – Base Year Model Volume)</i></p>
<p><i>Cumulative Plus Project Forecast =</i></p> <p><i>Existing Volume + (Cumulative Year Plus Project Model Volume – Base Year Model Volume)</i></p>



## Existing Conditions

This chapter presents the results of intersection operations analysis under Existing and Existing Plus Project conditions.

### Existing Intersection Operations

**Table 2** displays the existing AM and PM peak hour operations at the study intersections. AM and PM peak hour turning movements, lane configurations, and technical calculations at the study intersections under Existing conditions are displayed in **Appendix A**.

Based on Synchro analysis, all intersections currently operate at an acceptable LOS according to City standards. However, field observations conducted during the AM and PM peak hours along E. 20<sup>th</sup> Street near State Route (SR) 99 suggested delays far exceeded those estimated by Synchro. Queuing was observed to extend from the E. 20<sup>th</sup> Street eastbound approach at the southbound SR 99 ramp intersection through the adjacent intersection of Dr. Martin Luther King Jr. Parkway. Synchro inappropriately assigns queue delay to the intersection most impacted by the queue, rather than the source of the queuing. These observations indicate that the LOS at both E. 20<sup>th</sup> Street & SR 99 ramp intersections likely exceed Synchro estimates. Nevertheless, to the extent this is the case, given the presence of transit service and bicycle facilities in the vicinity, coupled with the fact that Caltrans no longer applies a Level of Service policy, operations along E. 20<sup>th</sup> Street near SR 99 would have an LOS performance expectation of LOS E (See *Chico 2030 General Plan, Policy CIRC-1.4*).

**Table 2: Intersection Operations – Existing Conditions**

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
1a. W. 11th Street & Park Avenue	SSSC	1 (25)	A (C)	1 (16)	A (C)
1b. E. 11th Street & Park Avenue	SSSC	1 (12)	A (B)	1 (12)	A (B)
2. Ivy Street & W. 8th Street	Signal	6	A	7	A
3. Ivy Street & W. 9th Street	Signal	6	A	8	A
4. Ivy Street & W. 12th Street	SSSC	3 (10)	A (A)	2 (11)	A (B)
5. W. 14th Street & Park Avenue	Signal	4	A	4	A
6a. W. 14th Street & Broadway	SSSC	3 (9)	A (A)	3 (9)	A (A)
6b. W. 14th Street & Broadway	SSSC	3 (9)	A (A)	3 (9)	A (A)
7. W. 14th Street & Chestnut Street	SSSC	8 (9)	A (A)	2 (9)	A (A)
8. W. 16th Street & Park Avenue	Signal	4	A	5	A
9. W. 16th Street & Broadway	AWSC	7 (7)	A (A)	7 (7)	A (A)
10. W. 16th Street & Chestnut Street	SSSC	4 (9)	A (A)	3 (9)	A (A)
11. W. 18th Street & Park Avenue	SSSC	1 (16)	A (C)	1 (19)	A (C)





Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
12. W. 18th Street & Broadway	SSSC	5 (9)	A (A)	4 (9)	A (A)
13. W. 18th Street & Normal Avenue	SSSC	8 (9)	A (A)	8 (9)	A (A)
14a. E. 20th Street & Park Avenue	Signal	10	B	13	B
14b. W. 20th Street & Park Avenue	SSSC	1 (10)	A (B)	1 (11)	A (B)
15. W. 20th Street & Normal Avenue	SSSC	2 (9)	A (A)	1 (9)	A (A)
16. W. 22nd Street & Park Avenue	Signal	2	A	2	A
17. 22nd Street & Normal Avenue/Estes Road	SSSC	3 (5)	A (A)	2 (4)	A (A)
18. Park Avenue-Midway & E. Park Avenue	Signal	15	B	16	B
19. E. 20th Street & SR 99 SB Ramps <sup>2</sup>	Signal	12	B	20	B
20. E. 20th Street & SR 99 NB Ramps <sup>2</sup>	Signal	8	A	12	B
<p>Notes:</p> <p>SSSC = Side-Street Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service.</p> <p>"a" or "b" indicate a pair of T-legged intersections</p> <p><b>Bold</b> indicates deficient operations based on <i>Chico 2030 General Plan</i> LOS performance expectations.</p> <p>1. For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and worst-case movement/approach. Intersection delay is calculated based on the procedures and methodology contained in the <i>Highway Capacity Manual 7<sup>th</sup> Edition</i> (Transportation Research Board, 2022).</p> <p>2. Synchro analysis results at the SR 99 ramp intersections conflict with field observations of this area. See discussion above.</p> <p>Source: Fehr &amp; Peers, 2024.</p>					

## Project Trip Generation

Project trip generation estimates were prepared using a combination of the *Trip Generation Manual, 11<sup>th</sup> Edition* (Institute of Transportation Engineers, 2021) and the Mixed-Use Trip Generation Model (MXD+), which was originally developed for the US Environmental Protection Agency (EPA) to estimate internal trip-making and external trips made by non-auto travel modes for mixed-use land development projects. The model was developed based on empirical evidence at 240 mixed-use projects located across the U.S. and considers various built environment variables such as land use density, regional location, proximity to transit, and various design variables when calculating the project's internal trips and external trips made by auto, transit, and non-motorized modes. Estimated internal trips between on-site land uses and other trip reductions due to mode shift from vehicle to walk, bike, or transit trips are subtracted from the gross trip generation.

Because land uses such as retail and restaurants attract pass-by trips, they are also considered in project trip generation. Pass-by trips represent drivers already travelling adjacent to the project that decide to patronize the project site. Therefore, pass-by trips are not generated by the project but are existing



vehicles on the roadway facility. The rates were calculated from the *Trip Generation Manual Appendices* (Institute of Transportation Engineers, 2021).

**Table 3** presents the estimated daily, AM peak hour, and PM peak hour vehicle trips created by the proposed project. While the proposed project would generate substantial numbers of entering/exiting trips, roughly a third of those trips would be internal trips, trips of other transportation modes, or pass-by trips.

**Table 3: Project Trip Generation**

Land Use Type (ITE Code)	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
			In	Out	Total	In	Out	Total
Single Family Detached Housing (210)	530 DUs	4,680	88	251	340	300	176	477
Single Family Attached Housing (215)	107 DUs	765	15	34	50	34	26	60
Multifamily Housing (Low-Rise) (220)	613 DUs	4,005	37	208	245	228	84	313
Health/Fitness Club (492)	130.0 KSF	3,094	87	83	170	256	193	449
Retail Plaza (821)	40.0 KSF	1,918	57	38	94	132	132	264
Restaurant (932)	22.8 KSF	2,444	120	98	218	126	80	206
Event Center <sup>1</sup>	17.2 KSF	NA	-	-	-	-	-	-
<b>Gross Daily Trips</b>		<b>16,905</b>	<b>404</b>	<b>714</b>	<b>1,118</b>	<b>1,076</b>	<b>692</b>	<b>1,768</b>
Vehicle Trip Reduction <sup>2</sup>		2,627	89	157	246	251	161	412
Pass-by Trips <sup>3</sup>		1,725	65	50	115	92	75	167
<b>New Daily Vehicle Trips</b>		<b>12,553</b>	<b>250</b>	<b>506</b>	<b>756</b>	<b>733</b>	<b>455</b>	<b>1,189</b>
<p>Notes: DU = Dwelling Units, KSF = 1,000 square feet</p> <p>1. Communications with the project applicant and the City of Chico indicated that on a typical weekday during peak hours of traffic, no vehicular trips would be generated by the event center given its infrequent use as a private event center. Future special use of the facility shall be determined by conditional use permit.</p> <p>2. Vehicle trip reduction is based on MXD+ and includes internal capture of vehicles and mode shifts from vehicle to transit, walking, and biking.</p> <p>3. Pass-by trip percentages are based on data from the <i>Trip Generation Manual, 11<sup>th</sup> Edition</i> (Institute of Transportation Engineers, 2021).</p> <p>Source: Trip generation is based on trip rates published in <i>Trip Generation Manual, 11<sup>th</sup> Edition</i> (ITE, 2021). Fehr &amp; Peers, 2023.</p>								

## Project Trip Distribution

The distribution of project trips is based on existing travel patterns, location of complimentary land uses, and output from the BCAG/RTP Model. **Figure 3** illustrates the project trip distribution percentages. In general, trips were assigned to use the most time efficient travel paths between the proposed project's trip origins and destinations.



## Existing Plus Project Intersection Operations

Existing Plus Project conditions reflect the addition of project trips to the existing intersection traffic volumes.

**Table 4** displays the resulting AM and PM peak hour intersection operations. As shown in Table 4, all intersections would operate acceptably based on City standards in the AM and PM peak hours under Existing Plus Project conditions. Peak hour turning movements, lane configurations, and technical calculations at the study intersections under Existing Plus Project conditions are displayed in **Appendix B**.

**Table 4: Intersection Operations – Existing vs. Existing Plus Project Conditions**

Intersection	Control Type	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
1a. W. 11th Street & Park Avenue	SSSC	2 (25)	A (C)	1 (16)	A (C)	1 (27)	A (D)	1 (18)	A (C)
1b. E. 11th Street & Park Avenue	SSSC	1 (12)	A (B)	1 (12)	A (B)	1 (14)	A (B)	1 (15)	A (B)
2. Ivy Street & W. 8th Street	Signal	6	A	7	A	8	A	13	B
3. Ivy Street & W. 9th Street	Signal	6	A	8	A	9	A	36	D
4. Ivy Street & W. 12th Street	SSSC	3 (10)	A (A)	2 (11)	A (B)	2 (18)	A (C)	2 (28)	A (D)
5. W. 14th Street & Park Avenue	Signal	4	A	4	A	5	A	8	A
6a. W. 14th Street & Broadway	SSSC	3 (9)	A (A)	3 (9)	A (A)	7 (9)	A (A)	9 (11)	A (B)
6b. W. 14th Street & Broadway	SSSC	3 (9)	A (A)	3 (9)	A (A)	7 (10)	A (A)	10 (16)	B (C)
7. W. 14th Street & Chestnut Street	SSSC	8 (9)	A (A)	2 (9)	A (A)	3 (11)	A (B)	11 (15)	B (B)
8. W. 16th Street & Park Avenue	Signal	4	A	5	A	10	A	31	C
9. W. 16th Street & Broadway	AWSC	7 (7)	A (A)	7 (7)	A (A)	12 (13)	B (B)	21 (26)	C (D)
10. W. 16th Street & Chestnut Street	SSSC	4 (9)	A (A)	3 (9)	A (A)	1 (13)	A (B)	1 (20)	A (C)
11. W. 18th Street & Park Avenue	SSSC	1 (16)	A (C)	1 (19)	A (C)	3 (34)	A (D)	10 (182)	A (F)
12. W. 18th Street & Broadway	SSSC	5 (9)	A (A)	4 (9)	A (A)	10 (11)	B (B)	9 (11)	A (B)



Intersection	Control Type	Existing Conditions				Existing Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
13. W. 18th Street & Normal Avenue	SSSC	8 (9)	A (A)	8 (9)	A (A)	2 (12)	A (B)	3 (12)	A (B)
14a. E. 20th Street & Park Avenue	Signal	10	B	13	B	11	B	23	C
14b. W. 20th Street & Park Avenue	SSSC	1 (10)	A (B)	1 (11)	A (B)	2 (15)	A (B)	1 (13)	A (B)
15. W. 20th Street & Normal Avenue	SSSC	2 (9)	A (A)	1 (9)	A (A)	10 (11)	B (B)	9 (10)	A (B)
16. W. 22nd Street & Park Avenue	Signal	2	A	2	A	4	A	5	A
17. 22nd Street & Normal Avenue/Estes Road	SSSC	3 (5)	A (A)	2 (4)	A (A)	4 (10)	A (B)	8 (11)	A (B)
18. Park Avenue-Midway & E. Park Avenue	Signal	15	B	16	B	22	C	23	C
19. E. 20th Street & SR 99 SB Ramps <sup>2</sup>	Signal	12	B	20	B	12	B	22	C
20. E. 20th Street & SR 99 NB Ramps <sup>2</sup>	Signal	8	A	12	B	8	A	12	B
<p>Notes: SSSC = Side-Street Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service.            "a" or "b" indicate a pair of T-legged intersections.  <b>Bold</b> indicates deficient operations based on <i>Chico 2030 General Plan</i> LOS performance expectations.            1. For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and worst-case movement/approach. Intersection delay is calculated based on the procedures and methodology contained in the <i>Highway Capacity Manual, 7<sup>th</sup> Edition</i> (Transportation Research Board, 2022).            2. Synchro analysis results at the SR 99 ramp intersections, which show 95th percentile queues of roughly two to four vehicles on major approaches, conflict with field observations of this area. See discussion in Existing Intersection Operations.            Source: Fehr &amp; Peers, 2024.</p>									

As displayed in **Table 4**, with the addition of project trips, the side-street movements of the W. 18th Street & Park Avenue intersection would operate deficiently in the PM peak hour with LOS of F, though the average delay across all movements would be acceptable at an LOS of A. Potential intersection control modifications to the intersection include all-way stop control and signalization. Given the imbalanced approach volumes, higher volume of existing traffic on Park Avenue, and the surrounding intersection control (including signals at 16<sup>th</sup> Street and 20<sup>th</sup> Street along Park Avenue), a signal is recommended. The intersection passes California Manual of Uniform Traffic Control Devices (MUTCD) (Caltrans, 2014) Peak Hour Signal Warrants 3A and 3B, as shown in **Appendix C**. This condition may also warrant a signal based



on Warrant 8, which considers the concentration and organization of traffic flow on a roadway network, as copied in **Appendix C**.

**Table 5** displays the intersection AM and PM peak hour intersection operations with recommended intersection improvements. Under Existing Plus Project conditions, the installation of a signal at the 18th Street and Park Avenue intersection would improve operations to LOS A during both peak hours. Signal timing modification to coordinate with the signals at intersections 14th Street & Park Ave and 16th & Park Ave were made so all study intersections would operate acceptably. The installation of a traffic signal at 18th Street & Park Avenue would likely also improve operations at the adjacent intersections of 16th Street & Park Avenue and 20th Street & Park Avenue.

**Table 5: Intersection Operations – Existing Plus Project Conditions with Improvements**

Intersection	Updated Control Type	AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
11. W. 18th Street & Park Avenue	Signal	7	A	6	A
Notes: LOS = Level of Service. <sup>1</sup> For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 7 <sup>th</sup> Edition (Transportation Research Board, 2022). Source: Fehr & Peers, 2024.					

To estimate the traffic impacts of the proposed project on nearby arterials, **Table 6** shows the traffic volume changes between Existing and Existing Plus Project.

**Table 6: Traffic Volume Changes – Existing Plus Project Conditions**

Location	Scenario	AM Peak Hour		PM Peak Hour	
		Bidirectional Volume	Percent Change	Bidirectional Volume	Percent Change
Ivy Street between 9th Street and 12th Street	Existing	169	+291%	353	+182%
	Existing Plus Project	660		995	
Park Avenue between W. 9th Street and 11th Street	Existing	1,407	+7%	1,522	+8%
	Existing Plus Project	1,495		1,645	
Park Avenue between 18 <sup>th</sup> Street and 20 <sup>th</sup> Street	Existing	994	+57%	1,575	+53%
	Existing Plus Project	1,565		2,410	
Midway south of E. Park Avenue	Existing	1,243	+13%	1,377	+23%
	Existing Plus Project	1,405		1,700	
Source: Fehr & Peers, 2023					



### Existing Plus Project Roadway Condition

While the proposed project would increase the volume of traffic on study area roadways, the mix and speed of traffic is expected to remain like existing conditions. However, an increase in volume could exacerbate physical deficiencies, such as poor pavement condition.

Therefore, the applicant should work with the City to address already present deficiencies and restore physical roadway conditions to a state of good repair along several roadways in the BYSP Area through in lieu fees or a fair share agreement.

Any phasing of these improvements should be coordinated between the project applicant, the city of Chico, and BCAG, especially for improvements that may be appropriate to include in the Regional Transportation Plan (RTP) for additional funding. One potential phased approach is introduced in Table 7 below.

**Table 7: Phased Approach to Pavement Improvements**

Phase	Streets to Improve
<b>Phase 1</b>	Ivy Street from within the Barber Yard Plan Area to 10th Avenue W 14th Street from within the Barber Yard Plan Area to Park Avenue Chestnut Street from W 9th Street to W 14th Street W 16th Street from within the Barber Yard Plan Area to Park Avenue
<b>Phase 2</b>	W 18th Street from within the Barber Yard Plan Area to Park Avenue Broadway from W 8th Street to W 20th Street Salem Street from W 9th Street to 11th Street and W 15th Street to W 20th Street Normal Avenue from W 12th Street to W 20th Street
<b>Phase 3</b>	W 20th Street from within the Barber Yard Plan Area to Park Avenue Estes Road from the southeast corner of the Barber Yard Plan Area to Normal Avenue



## Cumulative Conditions

This chapter presents the results of intersection operations analysis under Cumulative conditions. The analysis reflects long-term development in the City of Chico and the Butte County region using the 2045 cumulative model previously described. Reviewers should note that intersection turning movement volume forecasts beyond five years have high levels of uncertainty and may be speculative.

The Cumulative Year analysis includes modifications to the roadway network that are planned to be funded and constructed by 2045 according to the BCAG RTP/SCS. Within the study area, that includes widening Midway from two to four lanes between E. Park Avenue and Hegan Lane. The cumulative model also includes construction of a new SR 99 interchange at Southgate Avenue<sup>2</sup>, roughly two miles south of E. 20<sup>th</sup> Street and one mile south of E. Park Avenue, which impacts the distribution of vehicle trips.

## Cumulative No Project Intersection Operations

**Table 7** presents the AM and PM peak hour intersection operations under Cumulative No Project conditions. As shown in Table 7, all intersections would operate acceptably based on City standards in the peak hours under Cumulative No Project conditions. AM and PM peak hour turning movements, lane configurations, and technical calculations at the study intersections under Cumulative No Project conditions are displayed in **Appendix D**.

**Table 7: Intersection Operations – Cumulative No Project Conditions**

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
1a. W. 11th Street & Park Avenue	SSSC	2 (41)	A (E)	2 (22)	A (C)
1b. E. 11th Street & Park Avenue	SSSC	1 (16)	A (C)	1 (14)	A (B)
2. Ivy Street & W. 8th Street	Signal	6	A	7	A
3. Ivy Street & W. 9th Street	Signal	6	A	10	A
4. Ivy Street & W. 12th Street	SSSC	4 (10)	A (A)	3 (11)	A (B)
5. W. 14th Street & Park Avenue	Signal	4	A	5	A
6a. W. 14th Street & Broadway	SSSC	4 (9)	A (A)	3 (9)	A (A)
6b. W. 14th Street & Broadway	SSSC	4 (9)	A (A)	3 (9)	A (A)
7. W. 14th Street & Chestnut Street	SSSC	8 (9)	A (A)	2 (9)	A (A)
8. W. 16th Street & Park Avenue	Signal	5	A	5	A
9. W. 16th Street & Broadway	AWSC	7 (7)	A (A)	7 (7)	A (A)
10. W. 16th Street & Chestnut Street	SSSC	3 (9)	A (A)	3 (9)	A (A)
11. W. 18th Street & Park Avenue	SSSC	1 (34)	A (D)	2 (39)	A (E)

<sup>2</sup> This interchange is also contained in the project list of the *State Route 70-99 Comprehensive Multimodal Corridor Plan* (Caltrans District 3, June 23, 2022).



Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
12. W. 18th Street & Broadway	SSSC	6 (9)	A (A)	6 (10)	A (A)
13. W. 18th Street & Normal Avenue	SSSC	6 (9)	A (A)	5 (10)	A (A)
14a. E. 20th Street & Park Avenue	Signal	12	B	14	B
14b. W. 20th Street & Park Avenue	SSSC	1 (10)	A (B)	1 (11)	A (B)
15. W. 20th Street & Normal Avenue	SSSC	3 (9)	A (A)	3 (9)	A (A)
16. W. 22nd Street & Park Avenue	Signal	3	A	3	A
17. 22nd Street & Normal Avenue/Estes Road	SSSC	3 (5)	A (A)	1 (4)	A (A)
18. Park Avenue-Midway & E. Park Avenue	Signal	33	C	30	C
19. E. 20th Street & SR 99 SB Ramps <sup>2</sup>	Signal	13	B	29	C
20. E. 20th Street & SR 99 NB Ramps <sup>2</sup>	Signal	10	B	23	C
<p>Notes:</p> <p>SSSC = Side-Street Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service.</p> <p>"a" or "b" indicate a pair of T-legged intersections</p> <p><b>Bold</b> indicates deficient operations based on <i>Chico 2030 General Plan</i> LOS performance expectations.</p> <p>1. For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For side street stop-controlled intersections, intersection delay is reported in seconds per vehicle for the overall intersection and worst-case movement/approach. Intersection delay is calculated based on the procedures and methodology contained in the <i>Highway Capacity Manual, 7<sup>th</sup> Edition</i> (Transportation Research Board, 2022).</p> <p>2. Synchro analysis results at the SR 99 ramp intersections conflict with existing field observations of this area. Vehicular delay and LOS are expected to degrade with increases in traffic in the cumulative condition. The E. 20th Street &amp; SR 99 ramp intersections will require further analysis by Caltrans.</p> <p>Source: Fehr &amp; Peers, 2024.</p>					





## Cumulative Plus Project Intersection Operations

The Cumulative BCAG RTP/SCS Year 2045 Model was used to develop Cumulative Plus Project trip distribution and forecasts. Project access with the same permitted movements as under Existing Plus Project conditions are analyzed under the Cumulative Plus Project conditions.

**Table 8** presents displays the AM and PM peak hour intersection operations under Cumulative Plus Project conditions. As shown in Table 8, all intersections would operate acceptably based on City standards in the peak hours under Cumulative Plus Project conditions. AM and PM peak hour turning movements, lane configurations, and technical calculations at the study intersections under Cumulative Plus Project conditions are displayed in **Appendix E**.

**Table 8: Intersection Operations – Cumulative No Project vs. Cumulative Plus Project Conditions**

Intersection	Control Type	Cumulative No Project Conditions				Cumulative Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
1a. W. 11th Street & Park Avenue	SSSC	2 (41)	A (E)	2 (22)	A (C)	2 (49)	A (E)	2 (22)	A (C)
1b. E. 11th Street & Park Avenue	SSSC	1 (16)	A (C)	1 (14)	A (B)	1 (17)	A (C)	1 (14)	A (B)
2. Ivy Street & W. 8th Street	Signal	6	A	7	A	8	A	13	B
3. Ivy Street & W. 9th Street	Signal	6	A	10	A	9	A	61	E
4. Ivy Street & W. 12th Street	SSSC	4 (10)	A (A)	3 (11)	A (B)	2 (18)	A (C)	2 (26)	A (D)
5. W. 14th Street & Park Avenue	Signal	4	A	5	A	5	A	9	A
6a. W. 14th Street & Broadway	SSSC	4 (9)	A (A)	3 (9)	A (A)	7 (9)	A (A)	9 (12)	A (B)
6b. W. 14th Street & Broadway	SSSC	4 (9)	A (A)	3 (9)	A (A)	7 (10)	A (B)	11 (17)	B (C)
7. W. 14th Street & Chestnut Street	SSSC	8 (9)	A (A)	2 (9)	A (A)	4 (11)	A (B)	12 (15)	B (C)
8. W. 16th Street & Park Avenue	Signal	5	A	5	A	10	A	31	C
9. W. 16th Street & Broadway	AWSC	7 (7)	A (A)	7 (7)	A (A)	12 (13)	B (B)	23 (29)	C (D)
10. W. 16th Street & Chestnut Street	SSSC	3 (9)	A (A)	3 (9)	A (A)	1 (13)	A (B)	1 (19)	A (C)
11. W. 18th Street & Park Avenue	SSSC	1 (34)	A (D)	2 (39)	A (E)	4 ( <b>66</b> )	A ( <b>F</b> )	<sup>15</sup> ( <b>237</b> )	B ( <b>F</b> )
12. W. 18th Street & Broadway	SSSC	6 (9)	A (A)	6 (10)	A (A)	10 (11)	B (B)	9 (11)	A (B)



Intersection	Control Type	Cumulative No Project Conditions				Cumulative Plus Project Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS	Delay <sup>1</sup>	LOS
13. W. 18th Street & Normal Avenue	SSSC	6 (9)	A (A)	5 (10)	A (A)	3 (12)	A (B)	3 (12)	A (B)
14a. E. 20th Street & Park Avenue	Signal	12	B	14	B	13	B	21	C
14b. W. 20th Street & Park Avenue	SSSC	1 (10)	A (B)	1 (11)	A (B)	2 (14)	A (B)	1 (14)	A (B)
15. W. 20th Street & Normal Avenue	SSSC	3 (9)	A (A)	3 (9)	A (A)	10 (12)	A (B)	9 (11)	A (B)
16. W. 22nd Street & Park Avenue	Signal	3	A	3	A	6	A	8	A
17. 22nd Street & Normal Avenue/Estes Road	SSSC	3 (7)	A (A)	1 (7)	A (A)	4 (10)	A (A)	9 (12)	A (B)
18. Park Avenue-Midway & E. Park Avenue	Signal	30	C	30	C	58	E	76	E
19. E. 20th Street & SR 99 SB Ramps <sup>2</sup>	Signal	13	B	30	C	13	B	34	C
20. E. 20th Street & SR 99 NB Ramps <sup>2</sup>	Signal	10	B	23	C	11	B	24	C

Notes: SSSC = Side-Street Stop Control; AWSC = All-Way Stop Control; LOS = Level of Service.

"a" or "b" indicate a pair of T-legged intersections

**Bold** indicates deficient operations based on *Chico 2030 General Plan* LOS performance expectations.

1. Average signalized intersection delay is reported in seconds per vehicle for all approaches. Intersection delay is calculated based on the procedures and methodology contained in the *Highway Capacity Manual, 7<sup>th</sup> Edition* (Transportation Research Board, 2022).

2. Synchro analysis results at the SR 99 ramp intersections conflict with existing field observations of this area, with delay expected to degrade with the increase in traffic in the future.

Source: Fehr & Peers, 2024.

As displayed in **Table 8**, with the addition of project trips, the side-street movements of the W. 18th Street & Park Avenue intersection would operate deficiently in the peak hours with LOS of F, though the average delay across all movements would be LOS of A or B. As discussed in the Existing Plus Project Intersection Operations section above, signalizing the 18<sup>th</sup> Street & Park Avenue intersection would bring the LOS on the side-street movements to an acceptable level in the peak hours in the Cumulative Plus Project condition, as shown in Table 9 below.

Additionally, though the intersections of Ivy Street & 9<sup>th</sup> Street and E. Park Avenue & Midway would operate at an LOS of E, this LOS is acceptable according to Chico 2030 General Plan LOS performance expectations as 9<sup>th</sup> Street, Park Avenue, and E. Park Avenue are served by transit and include bicycle and pedestrian facilities.



**Table 9: Intersection Operations – Cumulative Plus Project Conditions with Improvements**

Intersection	Control Type	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
11. W. 18th Street & Park Avenue	Signal	6	A	6	A
Note: Intersection delay is calculated based on the procedures and methodology contained in the Highway Capacity Manual 7th Edition (Transportation Research Board, 2022) in Synchro. Source: Fehr & Peers, 2024.					

## Conclusion

This chapter presents the conclusions of the entitlement review/intersection operations analysis for the proposed project (Barber Yard Specific Plan) located in the City of Chico.

### Intersection Operations Analysis

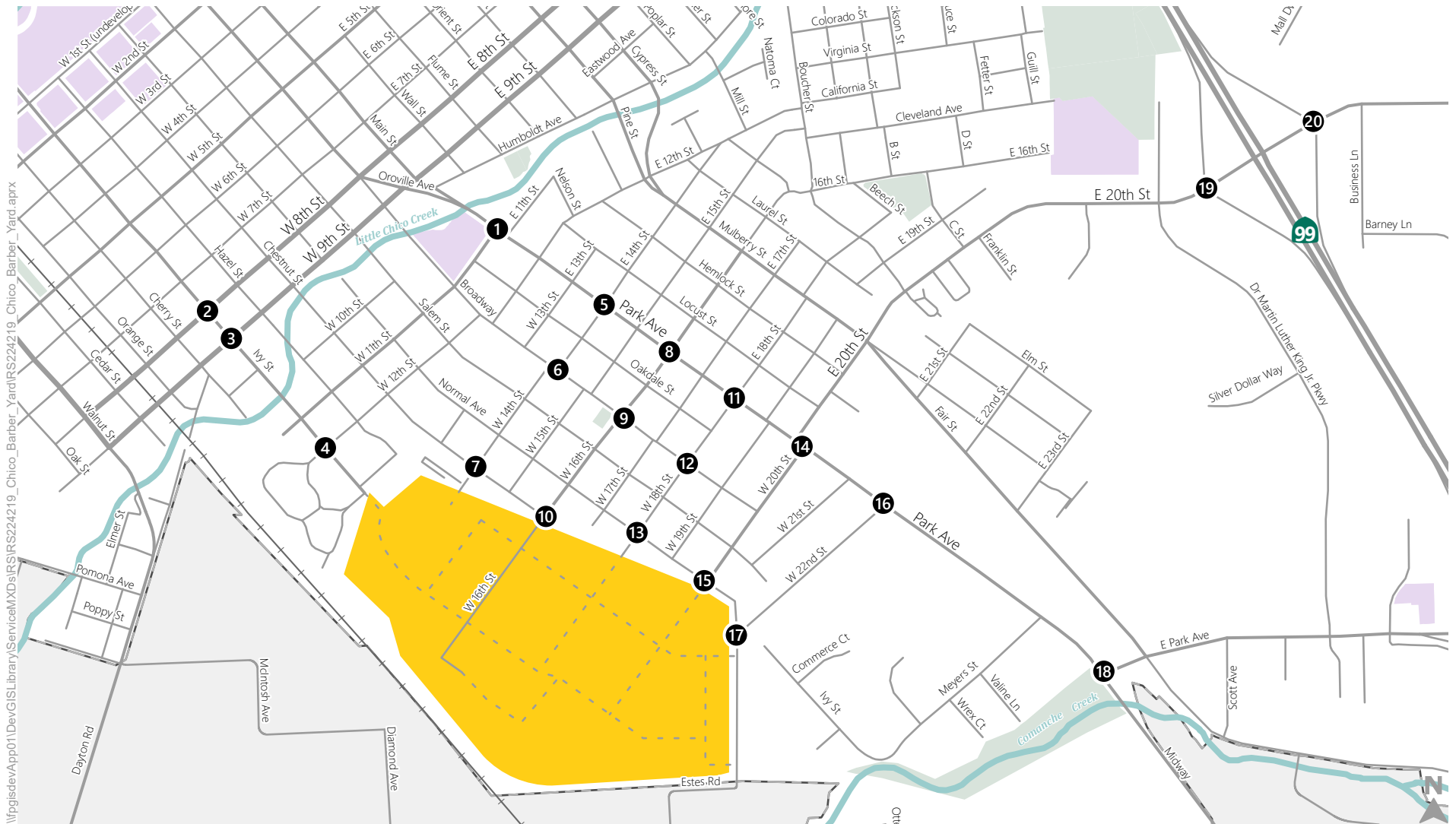
Results of the intersection operations analysis indicate that overall, the current study area can generally absorb the additional transportation demand that would be caused by the development of the proposed project without significantly diminishing the level of service at study intersections. With the additional project traffic, none of the 20 study intersections analyzed would operate deficiently during the AM and PM peak hours, though field observations indicated that the E. 20th Street & SR 99 ramp intersections may currently operate deficiently. Additionally, under Existing Plus Project conditions, signalization of the W. 18<sup>th</sup> Street & Park Avenue intersection would decrease excessive delays on the side-street approaches during peak hours.

Under Cumulative No Project and Cumulative Plus Project conditions, with improvements identified in the BCAG RTP/SCS, none of the 20 study intersections analyzed would operate deficiently during the AM and PM peak hours. However, under Cumulative Plus Project conditions, the side-street movements of the W. 18<sup>th</sup> Street & Park Avenue intersection would continue to experience high delays in the peak hours without signalization.

### Recommended Intersection Improvements

Due to the uncertainty of forecasting intersection-level volumes, the developer and City of Chico should coordinate to monitor traffic operations for the intersection listed below to determine when improvements are justified or warranted. The developer should perform an intersection traffic analysis prior to each phase of development, except for the first phase, to determine if the phase is likely to result in traffic signal warrants being met. Traffic signal warrant analysis shall be performed by a licensed traffic engineer and submitted to the City of Chico Public Works – Engineering Department for review and approval, as a condition of reviewing improvement plans for each project phase, except for the first phase provided that the first phase constitutes less than one-half of the overall project area.

- Install a traffic signal at the intersection of 18<sup>th</sup> Street & Park Avenue when appropriate signal warrants are met and/or when triggered by an observed LOS deficiency.



- Study Intersection
- Project Site
- - - Project Road
- Schools
- Parks
- Chico City Limits



Figure 1  
Study Area & Study Intersections

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Figure 2a  
BYSP Zoning Summary



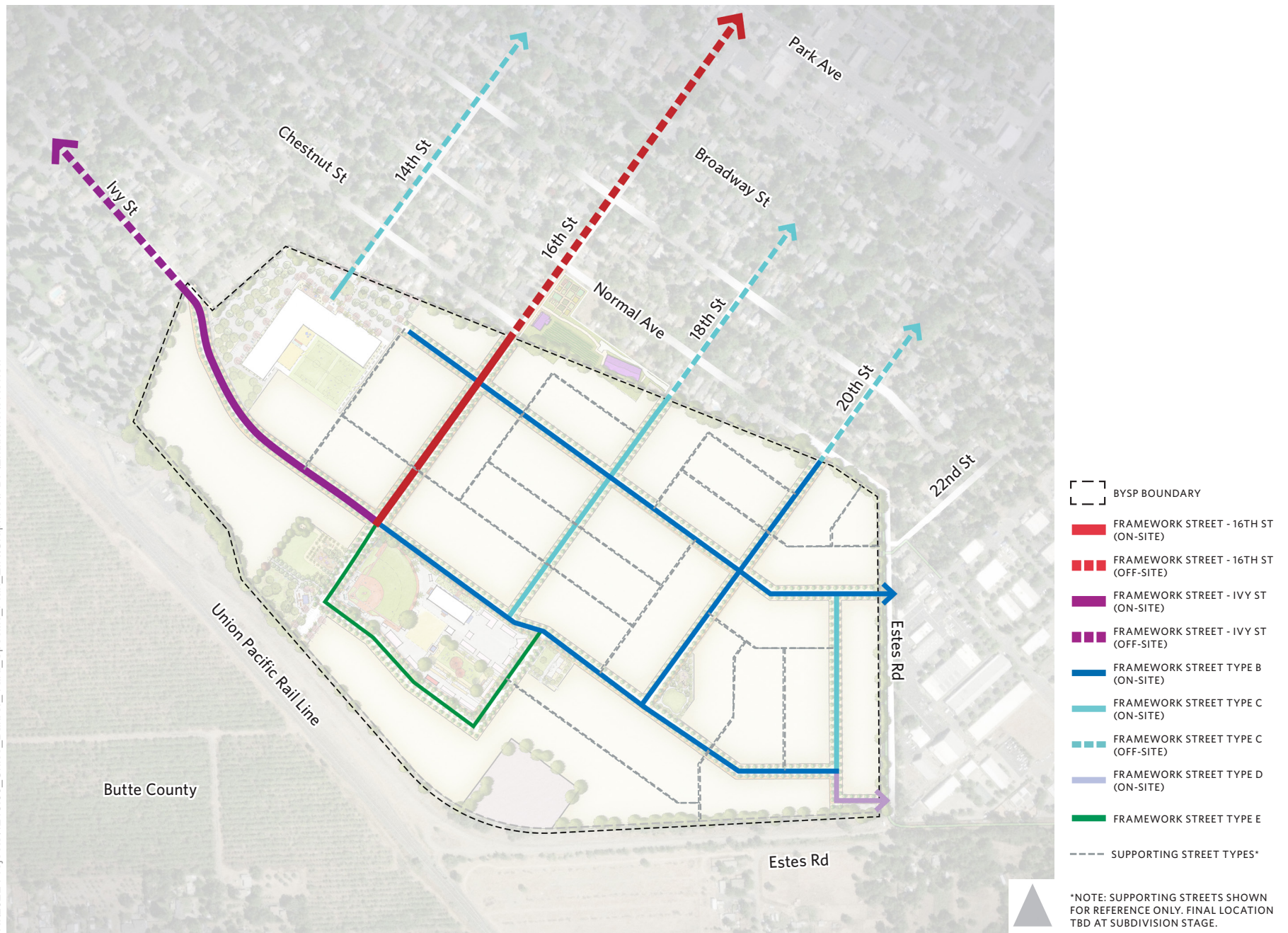
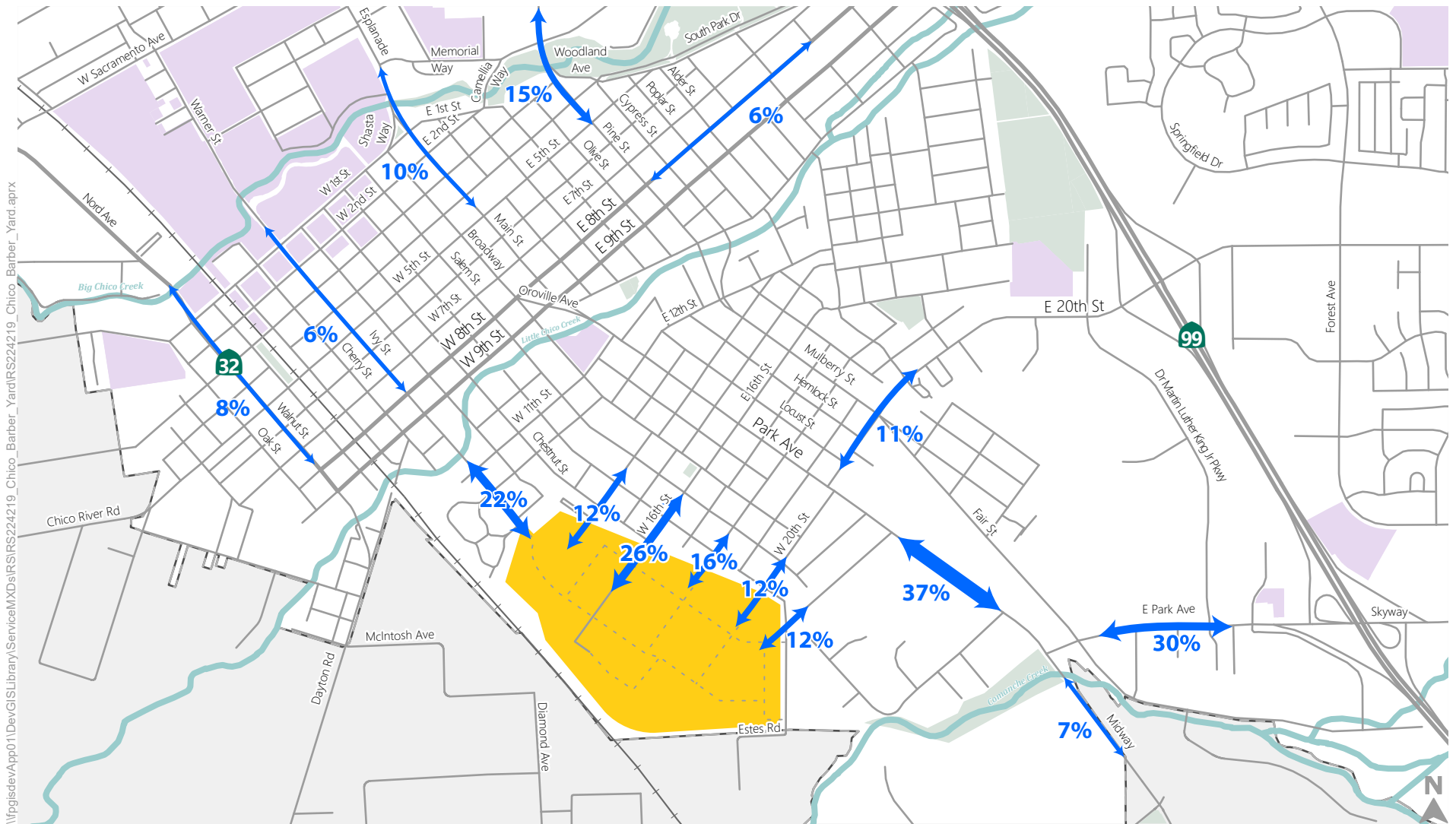


Figure 2b  
Street Hierarchy





Note: This graphic is provided for illustrative purposes only.  
Percentages reflect general trip distribution in the peak hours of travel.

Figure 3

## Project Trip Distribution



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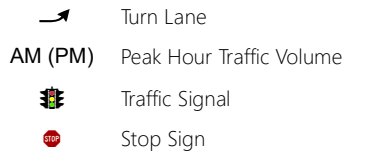
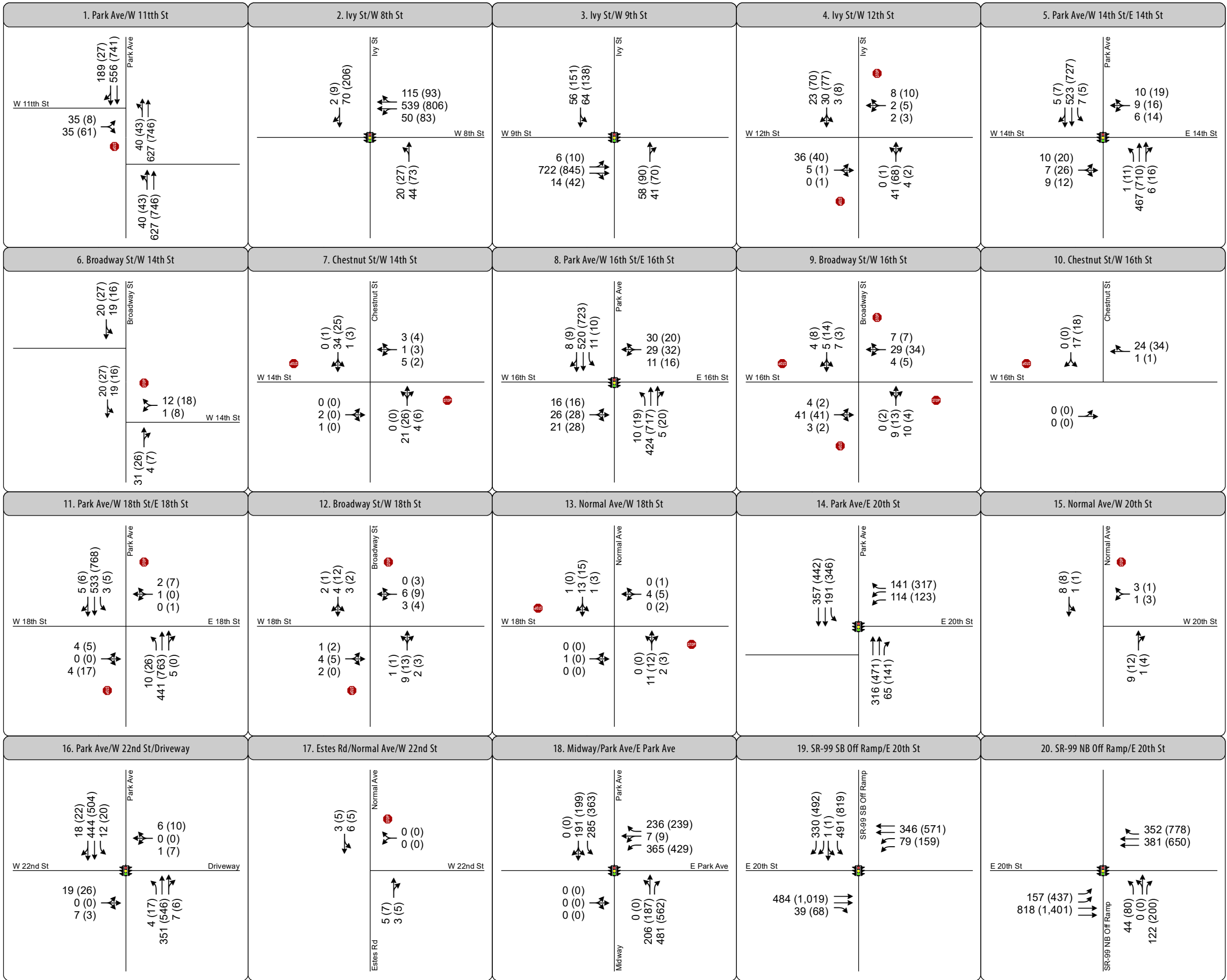


Figure A1  
Peak Hour Traffic Volumes  
and Lane Configurations -  
Existing Conditions





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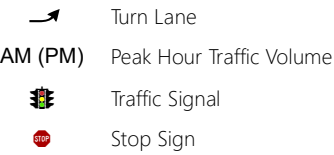
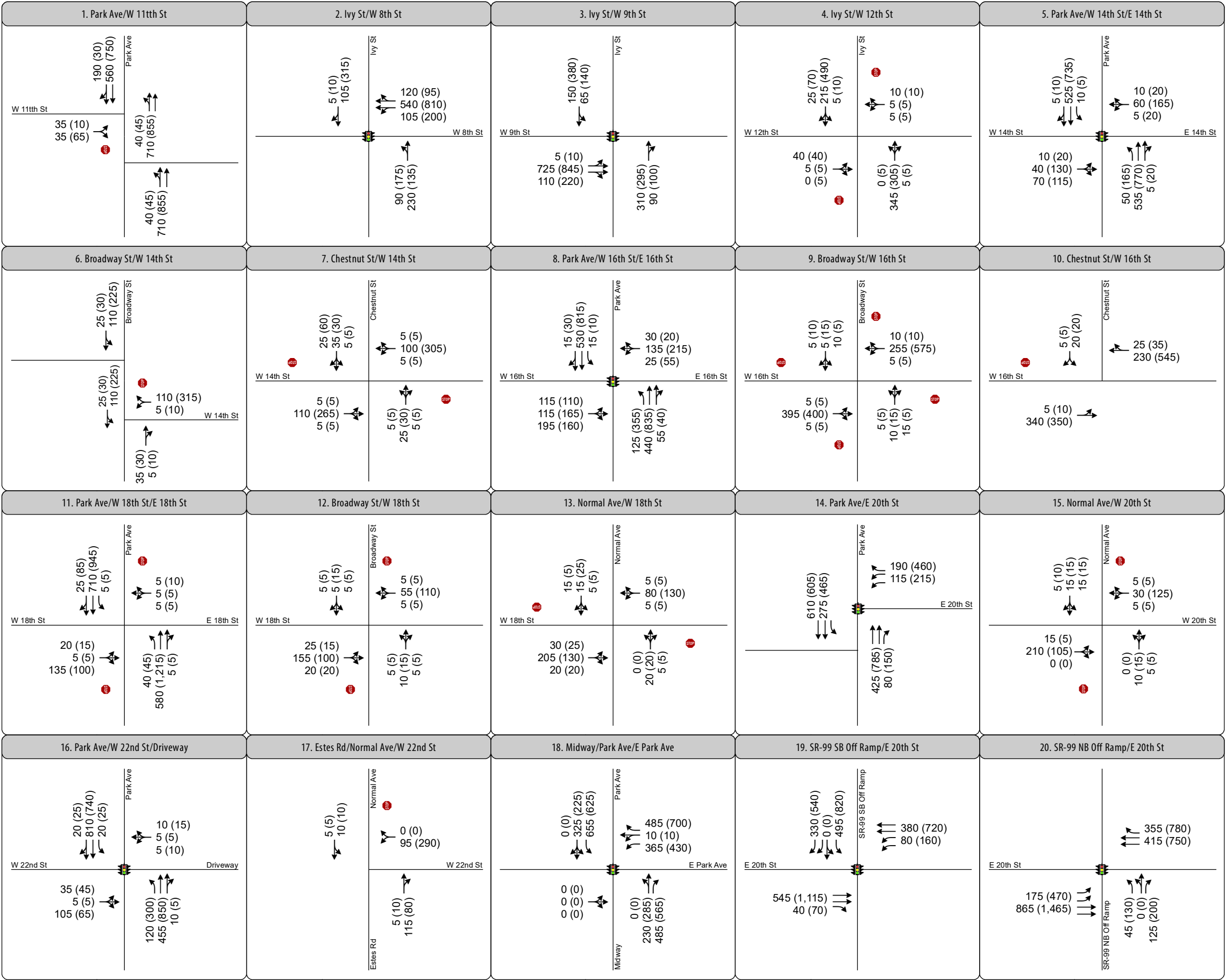


Figure A2  
Peak Hour Traffic Volumes  
and Lane Configurations -  
Existing Plus Project Conditions



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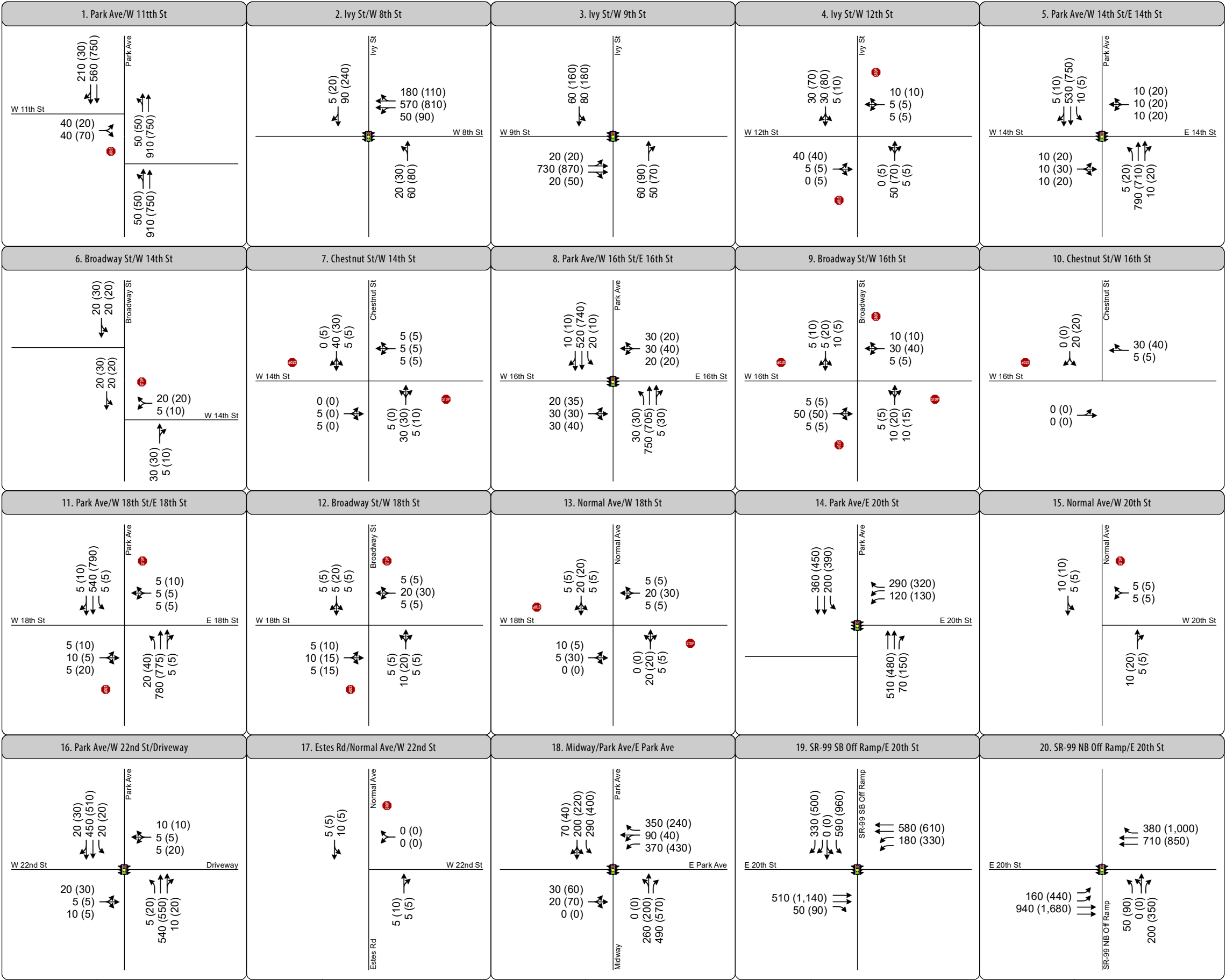


Figure A3  
Peak Hour Traffic Volumes  
and Lane Configurations -  
Cumulative No Project Conditions



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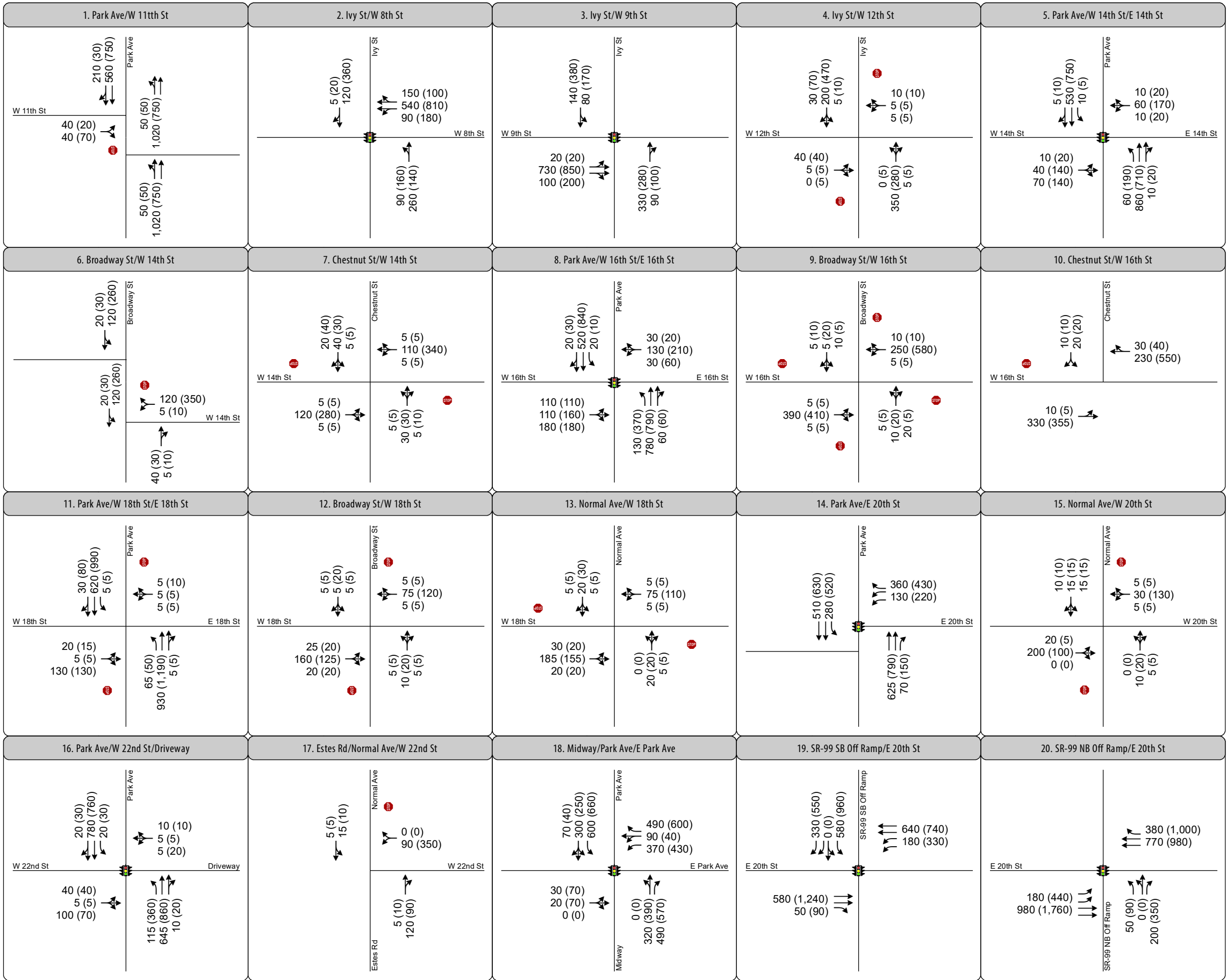








Figure A4  
Peak Hour Traffic Volumes  
and Lane Configurations -  
Cumulative Plus Project Conditions

Appendix A –  
**Existing Conditions**  
Peak Hour Traffic Volume  
Forecasts, Lane Configurations,  
and Technical Calculations

HCM 6th TWSC  
1a: Park Ave & W 11th St













Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	35	40	627	556	189
Future Vol, veh/h	35	35	40	627	556	189
Conflicting Peds, #/hr	0	0	7	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	39	39	44	697	618	210
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1167	421	835	0	-	0
Stage 1	730	-	-	-	-	-
Stage 2	437	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	185	578	788	-	-	-
Stage 1	435	-	-	-	-	-
Stage 2	616	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	166	574	783	-	-	-
Mov Cap-2 Maneuver	166	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	612	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	24.9		0.6		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	SBT	SBR
Capacity (veh/h)	783		-	258	-	-
HCM Lane V/C Ratio	0.057		-	0.301	-	-
HCM Control Delay (s)	9.9		-	24.9	-	-
HCM Lane LOS	A		-	C	-	-
HCM 95th %tile Q(veh)	0.2		-	1.2	-	-

Intersection						
Int Delay, s/veh	0.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	26	641	7	13	578
Future Vol, veh/h	7	26	641	7	13	578
Conflicting Peds, #/hr	0	0	0	7	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	8	29	712	8	14	642
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1072	367	0	0	727	0
Stage 1	723	-	-	-	-	-
Stage 2	349	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	214	627	-	-	866	-
Stage 1	439	-	-	-	-	-
Stage 2	682	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	207	623	-	-	860	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	436	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.4	0		0.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 523		860	-	
HCM Lane V/C Ratio	-	- 0.07		0.017	-	
HCM Control Delay (s)	-	- 12.4		9.3	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.2		0.1	-	

# HCM 6th Signalized Intersection Summary 2: Ivy St & W 8th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↱			↲	
Traffic Volume (veh/h)	0	0	0	50	539	115	20	44	0	0	70	2
Future Volume (veh/h)	0	0	0	50	539	115	20	44	0	0	70	2
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h				56	599	101	22	49	0	0	78	2
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				89	995	177	318	232	0	0	323	8
Arrive On Green				0.35	0.35	0.35	0.18	0.18	0.00	0.00	0.18	0.18
Sat Flow, veh/h				256	2844	505	397	1290	0	0	1800	46
Grp Volume(v), veh/h				404	0	352	71	0	0	0	0	80
Grp Sat Flow(s),veh/h/ln				1843	0	1762	1687	0	0	0	0	1846
Q Serve(g_s), s				3.5	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.7
Cycle Q Clear(g_c), s				3.5	0.0	3.1	0.6	0.0	0.0	0.0	0.0	0.7
Prop In Lane				0.14		0.29	0.31		0.00	0.00		0.02
Lane Grp Cap(c), veh/h				645	0	617	549	0	0	0	0	332
V/C Ratio(X)				0.63	0.00	0.57	0.13	0.00	0.00	0.00	0.00	0.24
Avail Cap(c_a), veh/h				2408	0	2302	1541	0	0	0	0	1447
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				5.2	0.0	5.1	6.7	0.0	0.0	0.0	0.0	6.7
Incr Delay (d2), s/veh				0.4	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.4	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				5.6	0.0	5.4	6.7	0.0	0.0	0.0	0.0	6.9
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					756			71			80	
Approach Delay, s/veh					5.5			6.7			6.9	
Approach LOS					A			A			A	
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	11.7			7.4			7.4					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	5.5			2.7			2.6					
Green Ext Time (p_c), s	1.1			0.1			0.1					
Intersection Summary												
HCM 6th Ctrl Delay			5.7									
HCM 6th LOS			A									
Notes												

# HCM 6th Signalized Intersection Summary 3: Ivy St & W 9th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	6	722	14	0	0	0	0	58	41	64	56	0
Future Volume (veh/h)	6	722	14	0	0	0	0	58	41	64	56	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.98	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h	7	802	14				0	64	18	71	62	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	11	1288	24				0	299	84	405	193	0
Arrive On Green	0.36	0.36	0.36				0.00	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	30	3601	66				0	1385	390	663	894	0
Grp Volume(v), veh/h	432	0	391				0	0	82	133	0	0
Grp Sat Flow(s),veh/h/ln	1854	0	1843				0	0	1775	1556	0	0
Q Serve(g_s), s	4.1	0.0	3.6				0.0	0.0	0.8	0.6	0.0	0.0
Cycle Q Clear(g_c), s	4.1	0.0	3.6				0.0	0.0	0.8	1.4	0.0	0.0
Prop In Lane	0.02		0.04				0.00		0.22	0.53		0.00
Lane Grp Cap(c), veh/h	663	0	659				0	0	383	598	0	0
V/C Ratio(X)	0.65	0.00	0.59				0.00	0.00	0.21	0.22	0.00	0.00
Avail Cap(c_a), veh/h	2197	0	2184				0	0	1262	1344	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	5.5				0.0	0.0	6.8	7.0	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.3				0.0	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5				0.0	0.0	0.2	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.1	0.0	5.8				0.0	0.0	6.9	7.1	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h	823						82			133		
Approach Delay, s/veh	6.0						6.9			7.1		
Approach LOS	A						A			A		
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	12.5			8.6			8.6					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	6.1			3.4			2.8					
Green Ext Time (p_c), s	1.2			0.2			0.1					

## Intersection Summary

HCM 6th Ctrl Delay	6.2
HCM 6th LOS	A

## Notes

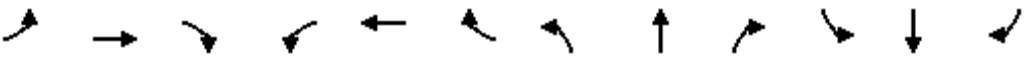
\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	36	5	0	2	2	8	0	41	4	3	30	23
Future Vol, veh/h	36	5	0	2	2	8	0	41	4	3	30	23
Conflicting Peds, #/hr	7	0	2	2	0	7	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	40	6	0	2	2	9	0	46	4	3	33	26
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	113	103	48	106	114	56	59	0	0	51	0	0
Stage 1	52	52	-	49	49	-	-	-	-	-	-	-
Stage 2	61	51	-	57	65	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	862	785	1018	871	774	1008	1538	-	-	1549	-	-
Stage 1	958	850	-	962	852	-	-	-	-	-	-	-
Stage 2	948	850	-	952	839	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	846	783	1016	862	772	1000	1538	-	-	1548	-	-
Mov Cap-2 Maneuver	846	783	-	862	772	-	-	-	-	-	-	-
Stage 1	958	848	-	961	851	-	-	-	-	-	-	-
Stage 2	931	849	-	942	837	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.5		8.9		0		0.4					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1538	-	-	838	929	1548	-	-				
HCM Lane V/C Ratio	-	-	-	0.054	0.014	0.002	-	-				
HCM Control Delay (s)	0	-	-	9.5	8.9	7.3	0	-				
HCM Lane LOS	A	-	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-				




# HCM 6th Signalized Intersection Summary 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	10	7	9	6	9	10	1	467	6	7	523	5
Future Volume (veh/h)	10	7	9	6	9	10	1	467	6	7	523	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	8	0	7	10	0	1	519	6	8	581	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	332	40	0	289	58	0	683	1789	21	713	1792	19
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	915	665	0	682	974	0	821	3568	41	869	3575	37
Grp Volume(v), veh/h	19	0	0	17	0	0	1	256	269	8	286	301
Grp Sat Flow(s),veh/h/ln	1580	0	0	1655	0	0	821	1763	1847	869	1763	1849
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	1.7	0.1	2.0	2.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.2	0.0	0.0	2.0	1.7	1.7	1.9	2.0	2.0
Prop In Lane	0.58		0.00	0.41		0.00	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	371	0	0	347	0	0	683	884	926	713	884	927
V/C Ratio(X)	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.29	0.29	0.01	0.32	0.32
Avail Cap(c_a), veh/h	2161	0	0	2230	0	0	2274	4300	4505	2397	4300	4509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	0.0	9.2	0.0	0.0	3.6	3.0	3.0	3.5	3.0	3.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.2	0.0	0.0	9.2	0.0	0.0	3.6	3.2	3.2	3.5	3.3	3.3
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		19			17			526			595	
Approach Delay, s/veh		9.2			9.2			3.2			3.3	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.3		5.2		15.3		5.2				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		4.0		2.2		4.0		2.2				
Green Ext Time (p_c), s		5.3		0.0		6.1		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			3.5									
HCM 6th LOS			A									




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	12	31	4	19	20
Future Vol, veh/h	1	12	31	4	19	20
Conflicting Peds, #/hr	0	1	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	13	34	4	21	22
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	104	41	0	0	42	0
Stage 1	40	-	-	-	-	-
Stage 2	64	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	892	1027	-	-	1561	-
Stage 1	980	-	-	-	-	-
Stage 2	956	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	876	1022	-	-	1555	-
Mov Cap-2 Maneuver	876	-	-	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.6	0		3.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	1009	1555	-	
HCM Lane V/C Ratio	-	-	0.014	0.014	-	
HCM Control Delay (s)	-	-	8.6	7.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	





HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	13	30	24	9
Future Vol, veh/h	0	15	13	30	24	9
Conflicting Peds, #/hr	0	1	2	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	17	14	33	27	10
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	97	37	41	0	-	0
Stage 1	36	-	-	-	-	-
Stage 2	61	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	900	1032	1562	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	885	1027	1556	-	-	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.6	2.2		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1556	-	1027	-	-	
HCM Lane V/C Ratio	0.009	-	0.016	-	-	
HCM Control Delay (s)	7.3	0	8.6	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

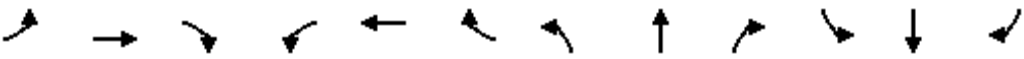
HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	8.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	2	1	5	1	3	0	21	4	1	34	0
Future Vol, veh/h	0	2	1	5	1	3	0	21	4	1	34	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	2	1	6	1	3	0	23	4	1	38	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	3	0	0	37	19	3	31	18	3
Stage 1	-	-	-	-	-	-	3	3	-	15	15	-
Stage 2	-	-	-	-	-	-	34	16	-	16	3	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1611	-	-	1612	-	-	966	873	1078	975	874	1078
Stage 1	-	-	-	-	-	-	1017	891	-	1002	881	-
Stage 2	-	-	-	-	-	-	979	880	-	1001	891	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1611	-	-	1612	-	-	931	870	1078	949	871	1078
Mov Cap-2 Maneuver	-	-	-	-	-	-	931	870	-	949	871	-
Stage 1	-	-	-	-	-	-	1017	891	-	1002	877	-
Stage 2	-	-	-	-	-	-	933	876	-	971	891	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			4			9.1			9.3		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	898	1611	-	-	1612	-	-	873				
HCM Lane V/C Ratio	0.031	-	-	-	0.003	-	-	0.045				
HCM Control Delay (s)	9.1	0	-	-	7.2	0	-	9.3				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

# HCM 6th Signalized Intersection Summary 8: Park Ave & W 16th St/E 16th St





Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕		↔	↕	
Traffic Volume (veh/h)	16	26	21	11	29	30	10	424	5	11	520	8
Future Volume (veh/h)	16	26	21	11	29	30	10	424	5	11	520	8
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	18	29	1	12	32	1	11	471	5	12	578	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	293	112	4	255	138	4	638	1721	18	691	1715	24
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	624	1005	35	439	1239	38	821	3572	38	908	3560	49
Grp Volume(v), veh/h	48	0	0	45	0	0	11	232	244	12	286	300
Grp Sat Flow(s),veh/h/ln	1663	0	0	1717	0	0	821	1763	1847	908	1763	1846
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.7	1.7	0.2	2.2	2.2
Cycle Q Clear(g_c), s	0.5	0.0	0.0	0.5	0.0	0.0	2.4	1.7	1.7	1.9	2.2	2.2
Prop In Lane	0.37		0.02	0.27		0.02	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	409	0	0	398	0	0	638	849	890	691	849	889
V/C Ratio(X)	0.12	0.00	0.00	0.11	0.00	0.00	0.02	0.27	0.27	0.02	0.34	0.34
Avail Cap(c_a), veh/h	2063	0	0	2112	0	0	2097	3982	4174	2306	3982	4171
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.0	0.0	0.0	9.0	0.0	0.0	4.3	3.4	3.4	4.0	3.5	3.5
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.0	0.0	0.0	9.0	0.0	0.0	4.3	3.7	3.7	4.0	3.9	3.9
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		48			45			487			598	
Approach Delay, s/veh		9.0			9.0			3.7			3.9	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		15.7		6.5		15.7		6.5				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		4.4		2.5		4.2		2.5				
Green Ext Time (p_c), s		4.8		0.1		6.1		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.2								
HCM 6th LOS				A								

Intersection




Intersection Delay, s/veh 7.2

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	41	3	4	29	7	0	9	10	7	5	4
Future Vol, veh/h	4	41	3	4	29	7	0	9	10	7	5	4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	46	3	4	32	8	0	10	11	8	6	4
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	8%	10%	44%
Vol Thru, %	47%	85%	72%	31%
Vol Right, %	53%	6%	17%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	48	40	16
LT Vol	0	4	4	7
Through Vol	9	41	29	5
RT Vol	10	3	7	4
Lane Flow Rate	21	53	44	18
Geometry Grp	1	1	1	1
Degree of Util (X)	0.022	0.06	0.049	0.02
Departure Headway (Hd)	3.818	4.032	3.974	4.074
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	932	889	901	874
Service Time	1.864	2.054	1.999	2.119
HCM Lane V/C Ratio	0.023	0.06	0.049	0.021
HCM Control Delay	7	7.3	7.2	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.2	0.1

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	24	17	0
Future Vol, veh/h	0	0	1	24	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	1	27	19	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	28	0	-	0	15	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1579	-	-	-	1001	1062
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1579	-	-	-	1001	1062
Mov Cap-2 Maneuver	-	-	-	-	1001	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.7		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1579	-	-	-	1001	
HCM Lane V/C Ratio	-	-	-	-	0.019	
HCM Control Delay (s)	0	-	-	-	8.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	



HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	4	0	4	0	1	2	10	441	5	3	533	5
Future Vol, veh/h	4	0	4	0	1	2	10	441	5	3	533	5
Conflicting Peds, #/hr	1	0	3	3	0	1	6	0	3	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	4	0	4	0	1	2	11	490	6	3	592	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	876	1131	308	826	1131	255	604	0	0	502	0	0
Stage 1	607	607	-	521	521	-	-	-	-	-	-	-
Stage 2	269	524	-	305	610	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	241	201	685	263	201	741	963	-	-	1052	-	-
Stage 1	448	482	-	504	527	-	-	-	-	-	-	-
Stage 2	711	526	-	677	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	235	196	679	256	196	736	957	-	-	1046	-	-
Mov Cap-2 Maneuver	235	196	-	256	196	-	-	-	-	-	-	-
Stage 1	440	478	-	495	518	-	-	-	-	-	-	-
Stage 2	699	517	-	669	477	-	-	-	-	-	-	-





Approach	EB		WB		NB		SB	
HCM Control Delay, s	15.6		14.5		0.2		0	
HCM LOS	C		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	957	-	-	349 384	1046	-	-
HCM Lane V/C Ratio	0.012	-	-	0.025 0.009	0.003	-	-
HCM Control Delay (s)	8.8	-	-	15.6 14.5	8.5	-	-
HCM Lane LOS	A	-	-	C B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1 0	0	-	-

HCM 6th TWSC  
12: Broadway St & W 18th St













Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	4.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	4	2	3	6	0	1	9	2	3	4	2
Future Vol, veh/h	1	4	2	3	6	0	1	9	2	3	4	2
Conflicting Peds, #/hr	2	0	0	0	0	2	3	0	1	3	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	1	4	2	3	7	0	1	10	2	3	4	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	33	31	8	30	31	16	9	0	0	15	0	0
Stage 1	14	14	-	16	16	-	-	-	-	-	-	-
Stage 2	19	17	-	14	15	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	972	860	1071	976	860	1060	1604	-	-	1596	-	-
Stage 1	1004	882	-	1001	880	-	-	-	-	-	-	-
Stage 2	997	879	-	1004	881	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	959	852	1068	965	852	1055	1599	-	-	1591	-	-
Mov Cap-2 Maneuver	959	852	-	965	852	-	-	-	-	-	-	-
Stage 1	1000	878	-	997	876	-	-	-	-	-	-	-
Stage 2	987	875	-	995	877	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	8.9		9.1		0.6		2.4					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1599	-	-	920	887	1591	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.008	0.011	0.002	-	-				
HCM Control Delay (s)	7.3	0	-	8.9	9.1	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				




Intersection												
Int Delay, s/veh	7.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1	0	0	4	0	0	11	2	1	13	1
Future Vol, veh/h	0	1	0	0	4	0	0	11	2	1	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1	0	0	4	0	0	12	2	1	14	1
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	4	0	0	1	0	0	13	5	1	12	5	4
Stage 1	-	-	-	-	-	-	1	1	-	4	4	-
Stage 2	-	-	-	-	-	-	12	4	-	8	1	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1611	-	-	1615	-	-	1001	888	1081	1003	888	1077
Stage 1	-	-	-	-	-	-	1019	893	-	1016	890	-
Stage 2	-	-	-	-	-	-	1006	890	-	1011	893	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1611	-	-	1615	-	-	988	888	1081	990	888	1077
Mov Cap-2 Maneuver	-	-	-	-	-	-	988	888	-	990	888	-
Stage 1	-	-	-	-	-	-	1019	893	-	1016	890	-
Stage 2	-	-	-	-	-	-	989	890	-	995	893	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			9			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	913	1611	-	-	1615	-	-	905				
HCM Lane V/C Ratio	0.016	-	-	-	-	-	-	0.018				
HCM Control Delay (s)	9	0	-	-	0	-	-	9.1				
HCM Lane LOS	A	A	-	-	A	-	-	A				
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1				

# HCM 6th Signalized Intersection Summary 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	114	141	316	65	191	357
Future Volume (veh/h)	114	141	316	65	191	357
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	127	13	351	18	212	397
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	507	505	850	370	306	1958
Arrive On Green	0.15	0.15	0.24	0.24	0.17	0.56
Sat Flow, veh/h	3428	1572	3618	1535	1767	3618
Grp Volume(v), veh/h	127	13	351	18	212	397
Grp Sat Flow(s),veh/h/ln	1714	1572	1763	1535	1767	1763
Q Serve(g_s), s	1.2	0.2	3.0	0.3	4.0	2.0
Cycle Q Clear(g_c), s	1.2	0.2	3.0	0.3	4.0	2.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	507	505	850	370	306	1958
V/C Ratio(X)	0.25	0.03	0.41	0.05	0.69	0.20
Avail Cap(c_a), veh/h	1937	1161	4483	1952	1248	3487
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	8.2	11.3	10.3	13.7	3.9
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	2.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	0.9	0.1	1.5	0.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	13.4	8.2	11.8	10.4	16.6	4.0
LnGrp LOS	B	A	B	B	B	A
Approach Vol, veh/h	140		369			609
Approach Delay, s/veh	13.0		11.7			8.4
Approach LOS	B		B			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	25.2		11.1		14.0	10.2
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 35		25.0		45.0	20.0
Max Q Clear Time (g_c+I1), s	4.0		6.0		5.0	3.2
Green Ext Time (p_c), s	2.8		0.6		3.5	0.2
Intersection Summary						
HCM 6th Ctrl Delay	10.0					
HCM 6th LOS	B					
Notes						
User approved pedestrian interval to be less than phase max green.						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	13	0	381	460	11
Future Vol, veh/h	0	13	0	381	460	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	14	0	423	511	12
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	262	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	734	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	734	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 734		-	-		
HCM Lane V/C Ratio	- 0.02		-	-		
HCM Control Delay (s)	- 10		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	3	9	1	1	8
Future Vol, veh/h	1	3	9	1	1	8
Conflicting Peds, #/hr	0	0	0	1	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	1	3	10	1	1	9



















Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	23	12	0
Stage 1	12	-	-
Stage 2	11	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	991	1066	-
Stage 1	1008	-	-
Stage 2	1009	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	989	1065	-
Mov Cap-2 Maneuver	989	-	-
Stage 1	1007	-	-
Stage 2	1008	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.5	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1045	1598
HCM Lane V/C Ratio	-	-	0.004	0.001
HCM Control Delay (s)	-	-	8.5	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	0	7	1	0	6	4	351	7	12	444	18
Future Volume (veh/h)	19	0	7	1	0	6	4	351	7	12	444	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	21	0	0	1	0	0	4	390	7	13	493	18
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	197	0	0	203	0	0	807	2746	49	888	2686	98
Arrive On Green	0.03	0.00	0.00	0.03	0.00	0.00	0.78	0.78	0.78	0.78	0.78	0.78
Sat Flow, veh/h	1399	0	0	1593	0	0	881	3543	64	979	3466	126
Grp Volume(v), veh/h	21	0	0	1	0	0	4	194	203	13	250	261
Grp Sat Flow(s),veh/h/ln	1399	0	0	1593	0	0	881	1763	1844	979	1763	1829
Q Serve(g_s), s	0.7	0.0	0.0	0.0	0.0	0.0	0.1	1.3	1.3	0.2	1.7	1.7
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.0	0.0	0.0	1.8	1.3	1.3	1.4	1.7	1.7
Prop In Lane	1.00		0.00	1.00		0.00	1.00		0.03	1.00		0.07
Lane Grp Cap(c), veh/h	197	0	0	203	0	0	807	1366	1429	888	1366	1418
V/C Ratio(X)	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.14	0.01	0.18	0.18
Avail Cap(c_a), veh/h	628	0	0	638	0	0	807	1366	1429	888	1366	1418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	0.0	21.6	0.0	0.0	1.6	1.3	1.3	1.5	1.4	1.4
Incr Delay (d2), s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.2	0.0	0.0	21.6	0.0	0.0	1.6	1.5	1.5	1.5	1.6	1.6
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h	21		1				401			524		
Approach Delay, s/veh	22.2		21.6				1.5			1.6		
Approach LOS	C		C				A			A		
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	40.0		5.8		40.0		5.8					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	35.5		15.5		35.5		15.5					
Max Q Clear Time (g_c+I1), s	3.8		2.7		3.7		2.0					
Green Ext Time (p_c), s	2.3		0.0		3.1		0.0					
Intersection Summary												
HCM 6th Ctrl Delay	2.1											
HCM 6th LOS	A											

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St





















Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	5	3	6	3
Future Vol, veh/h	0	0	5	3	6	3
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	6	3	7	3
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	27	10	0	0	11	0
Stage 1	10	-	-	-	-	-
Stage 2	17	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	986	1068	-	-	1602	-
Stage 1	1010	-	-	-	-	-
Stage 2	1003	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	980	1066	-	-	1599	-
Mov Cap-2 Maneuver	980	-	-	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	999	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		4.8		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1599		
HCM Lane V/C Ratio	-	-	-	0.004		
HCM Control Delay (s)	-	-	0	7.3		
HCM Lane LOS	-	-	A	A		
HCM 95th %tile Q(veh)	-	-	-	0		



# HCM 6th Signalized Intersection Summary 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	365	7	236	0	206	481	285	191	0
Future Volume (veh/h)	0	0	0	365	7	236	0	206	481	285	191	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811
Adj Flow Rate, veh/h	0	0	0	412	0	0	0	229	0	264	285	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	5	0	744	0		0	326		396	416	0
Arrive On Green	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.18	0.00	0.23	0.23	0.00
Sat Flow, veh/h	0	1811	0	3442	0	1535	0	1811	1535	1725	1811	0
Grp Volume(v), veh/h	0	0	0	412	0	0	0	229	0	264	285	0
Grp Sat Flow(s),veh/h/ln	0	1811	0	1721	0	1535	0	1811	1535	1725	1811	0
Q Serve(g_s), s	0.0	0.0	0.0	4.2	0.0	0.0	0.0	4.6	0.0	5.4	5.6	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	4.2	0.0	0.0	0.0	4.6	0.0	5.4	5.6	0.0
Prop In Lane	0.00		0.00	1.00		1.00	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	5	0	744	0		0	326		396	416	0
V/C Ratio(X)	0.00	0.00	0.00	0.55	0.00		0.00	0.70		0.67	0.69	0.00
Avail Cap(c_a), veh/h	0	882	0	3088	0		0	1625		1547	1625	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	13.6	0.0	0.0	0.0	15.0	0.0	13.7	13.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.9	0.0	0.0	0.0	2.1	0.0	0.7	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	1.3	0.0	0.0	0.0	1.7	0.0	1.6	1.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	14.5	0.0	0.0	0.0	17.1	0.0	14.4	14.5	0.0
LnGrp LOS	A	A	A	B	A		A	B		B	B	A
Approach Vol, veh/h	0				412			229			549	
Approach Delay, s/veh	0.0				14.5			17.1			14.5	
Approach LOS					B			B			B	
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	12.0			13.0			14.0			0.0		
Change Period (Y+Rc), s	5.0			4.6			5.0			4.6		
Max Green Setting (Gmax), s	35.0			35.0			35.0			19.0		
Max Q Clear Time (g_c+I1), s	6.6			6.2			7.6			0.0		
Green Ext Time (p_c), s	1.0			2.4			1.3			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	15.0											
HCM 6th LOS	B											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑↑					↘	↗	↗↗
Traffic Volume (veh/h)	0	484	39	79	346	0	0	0	0	491	1	330
Future Volume (veh/h)	0	484	39	79	346	0	0	0	0	491	1	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1841	1841	1841	1841	0				1841	1841	1841
Adj Flow Rate, veh/h	0	538	9	88	384	0				547	0	86
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	4	4	4	4	0				4	4	4
Cap, veh/h	0	817	359	435	1730	0				745	0	663
Arrive On Green	0.00	0.23	0.23	0.13	0.49	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	3589	1538	3401	3589	0				3506	0	3120
Grp Volume(v), veh/h	0	538	9	88	384	0				547	0	86
Grp Sat Flow(s),veh/h/ln	0	1749	1538	1700	1749	0				1753	0	1560
Q Serve(g_s), s	0.0	5.2	0.2	0.9	2.3	0.0				5.5	0.0	0.8
Cycle Q Clear(g_c), s	0.0	5.2	0.2	0.9	2.3	0.0				5.5	0.0	0.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	817	359	435	1730	0				745	0	663
V/C Ratio(X)	0.00	0.66	0.03	0.20	0.22	0.00				0.73	0.00	0.13
Avail Cap(c_a), veh/h	0	2699	1187	1810	5026	0				2333	0	2076
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.0	11.1	14.7	5.4	0.0				13.8	0.0	12.0
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.1	0.0	0.0				0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	0.0	0.3	0.5	0.0				1.8	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.4	11.1	14.8	5.4	0.0				14.3	0.0	12.0
LnGrp LOS	A	B	B	B	A	A				B	A	B
Approach Vol, veh/h		547			472						633	
Approach Delay, s/veh		13.3			7.2						14.0	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	9.8	14.8		13.0		24.6						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	12.9	7.2		7.5		4.3						
Green Ext Time (p_c), s	0.0	1.4		0.5		1.0						

## Intersection Summary

HCM 6th Ctrl Delay 11.8  
HCM 6th LOS B

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Existing Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑↑			↑↑	↖	↖	↖	↖			
Traffic Volume (veh/h)	157	818	0	0	381	352	44	0	122	0	0	0
Future Volume (veh/h)	157	818	0	0	381	352	44	0	122	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	1841	1841			
Adj Flow Rate, veh/h	174	909	0	0	423	88	49	0	9			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	4	4	0	0	4	4	4	4	4			
Cap, veh/h	665	1958	0	0	734	323	352	0	157			
Arrive On Green	0.20	0.56	0.00	0.00	0.21	0.21	0.10	0.00	0.10			
Sat Flow, veh/h	3401	3589	0	0	3589	1537	3506	0	1560			
Grp Volume(v), veh/h	174	909	0	0	423	88	49	0	9			
Grp Sat Flow(s),veh/h/ln	1700	1749	0	0	1749	1537	1753	0	1560			
Q Serve(g_s), s	1.4	5.0	0.0	0.0	3.5	1.6	0.4	0.0	0.2			
Cycle Q Clear(g_c), s	1.4	5.0	0.0	0.0	3.5	1.6	0.4	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	665	1958	0	0	734	323	352	0	157			
V/C Ratio(X)	0.26	0.46	0.00	0.00	0.58	0.27	0.14	0.00	0.06			
Avail Cap(c_a), veh/h	2101	5833	0	0	3133	1377	2707	0	1205			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.0	4.2	0.0	0.0	11.5	10.7	13.3	0.0	13.2			
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.3	0.2	0.1	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.4	0.7	0.0	0.0	1.0	0.4	0.1	0.0	0.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.1	4.3	0.0	0.0	11.8	10.9	13.4	0.0	13.2			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h	1083			511			58					
Approach Delay, s/veh	5.4			11.6			13.3					
Approach LOS	A			B			B					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	24.1			11.3			12.8			8.3		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	7.0			3.4			5.5			2.4		
Green Ext Time (p_c), s	2.7			0.3			1.1			0.1		

## Intersection Summary

HCM 6th Ctrl Delay	7.6
HCM 6th LOS	A




## Notes




User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
1a: Park Ave & W 11th St













Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	8	61	43	746	741	27
Future Vol, veh/h	8	61	43	746	741	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	68	48	829	823	30
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1349	427	853	0	-	0
Stage 1	838	-	-	-	-	-
Stage 2	511	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	142	576	782	-	-	-
Stage 1	385	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	126	576	782	-	-	-
Mov Cap-2 Maneuver	126	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Approach	EB		NB		SB	
HCM Control Delay, s	15.9		0.5		0	
HCM LOS	C					
Minor Lane/Major Mvmt	NBL		NBT	EBLn1	SBT	SBR
Capacity (veh/h)	782		-	407	-	-
HCM Lane V/C Ratio	0.061		-	0.188	-	-
HCM Control Delay (s)	9.9		-	15.9	-	-
HCM Lane LOS	A		-	C	-	-
HCM 95th %tile Q(veh)	0.2		-	0.7	-	-

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	16	773	6	10	792
Future Vol, veh/h	1	16	773	6	10	792
Conflicting Peds, #/hr	3	0	0	3	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	18	859	7	11	880
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1336	441	0	0	874	0
Stage 1	871	-	-	-	-	-
Stage 2	465	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	145	564	-	-	768	-
Stage 1	370	-	-	-	-	-
Stage 2	599	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	139	560	-	-	762	-
Mov Cap-2 Maneuver	264	-	-	-	-	-
Stage 1	367	-	-	-	-	-
Stage 2	580	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	12.1	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 525		762	-	
HCM Lane V/C Ratio	-	- 0.036		0.015	-	
HCM Control Delay (s)	-	- 12.1		9.8	-	
HCM Lane LOS	-	- B		A	-	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

# HCM 6th Signalized Intersection Summary 2: Ivy St & W 8th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↕			↕	
Traffic Volume (veh/h)	0	0	0	83	806	93	27	73	0	0	206	9
Future Volume (veh/h)	0	0	0	83	806	93	27	73	0	0	206	9
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		0.97
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1885	1885	0	0	1856	1856
Adj Flow Rate, veh/h				92	896	85	30	81	0	0	229	10
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	1	1	0	0	3	3
Cap, veh/h				123	1252	125	232	291	0	0	400	17
Arrive On Green				0.41	0.41	0.41	0.23	0.23	0.00	0.00	0.23	0.23
Sat Flow, veh/h				298	3039	303	214	1280	0	0	1762	77
Grp Volume(v), veh/h				568	0	505	111	0	0	0	0	239
Grp Sat Flow(s),veh/h/ln				1841	0	1800	1494	0	0	0	0	1839
Q Serve(g_s), s				6.5	0.0	5.7	0.1	0.0	0.0	0.0	0.0	2.9
Cycle Q Clear(g_c), s				6.5	0.0	5.7	2.9	0.0	0.0	0.0	0.0	2.9
Prop In Lane				0.16		0.17	0.27		0.00	0.00		0.04
Lane Grp Cap(c), veh/h				758	0	741	523	0	0	0	0	418
V/C Ratio(X)				0.75	0.00	0.68	0.21	0.00	0.00	0.00	0.00	0.57
Avail Cap(c_a), veh/h				1845	0	1804	1124	0	0	0	0	1106
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.2	0.0	6.0	7.9	0.0	0.0	0.0	0.0	8.6
Incr Delay (d2), s/veh				0.6	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.1	0.0	0.9	0.3	0.0	0.0	0.0	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				6.8	0.0	6.4	8.0	0.0	0.0	0.0	0.0	9.0
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					1073			111			239	
Approach Delay, s/veh					6.6			8.0			9.0	
Approach LOS					A			A			A	
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	15.3			9.7			9.7					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	8.5			4.9			4.9					
Green Ext Time (p_c), s	1.6			0.4			0.1					
Intersection Summary												
HCM 6th Ctrl Delay			7.1									
HCM 6th LOS			A									
Notes												

# HCM 6th Signalized Intersection Summary 3: Ivy St & W 9th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	10	845	42	0	0	0	0	90	70	138	151	0
Future Volume (veh/h)	10	845	42	0	0	0	0	90	70	138	151	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.96	0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	11	939	37				0	100	78	153	168	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	15	1295	54				0	313	244	357	290	0
Arrive On Green	0.36	0.36	0.36				0.00	0.32	0.32	0.32	0.32	0.00
Sat Flow, veh/h	40	3550	147				0	964	752	535	894	0
Grp Volume(v), veh/h	521	0	466				0	0	178	321	0	0
Grp Sat Flow(s),veh/h/ln	1883	0	1854				0	0	1716	1429	0	0
Q Serve(g_s), s	7.0	0.0	6.2				0.0	0.0	2.3	3.6	0.0	0.0
Cycle Q Clear(g_c), s	7.0	0.0	6.2				0.0	0.0	2.3	5.8	0.0	0.0
Prop In Lane	0.02		0.08				0.00		0.44	0.48		0.00
Lane Grp Cap(c), veh/h	687	0	676				0	0	556	647	0	0
V/C Ratio(X)	0.76	0.00	0.69				0.00	0.00	0.32	0.50	0.00	0.00
Avail Cap(c_a), veh/h	1627	0	1602				0	0	889	934	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.1	0.0	7.8				0.0	0.0	7.4	8.6	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.0	0.5				0.0	0.0	0.1	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.5				0.0	0.0	0.5	1.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.7	0.0	8.3				0.0	0.0	7.5	8.8	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h	987						178			321		
Approach Delay, s/veh	8.5						7.5			8.8		
Approach LOS	A						A			A		
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	15.6			13.4			13.4					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	9.0			7.8			4.3					
Green Ext Time (p_c), s	1.4			0.5			0.3					

## Intersection Summary

HCM 6th Ctrl Delay	8.4
HCM 6th LOS	A

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour



















Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	1	1	3	5	10	1	68	2	8	77	70
Future Vol, veh/h	40	1	1	3	5	10	1	68	2	8	77	70
Conflicting Peds, #/hr	3	0	5	5	0	3	2	0	0	0	0	2
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	44	1	1	3	6	11	1	76	2	9	86	78
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	236	225	132	228	263	80	166	0	0	78	0	0
Stage 1	145	145	-	79	79	-	-	-	-	-	-	-
Stage 2	91	80	-	149	184	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	723	678	923	731	646	986	1424	-	-	1533	-	-
Stage 1	863	781	-	935	833	-	-	-	-	-	-	-
Stage 2	921	832	-	858	751	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	703	671	917	721	640	983	1421	-	-	1533	-	-
Mov Cap-2 Maneuver	703	671	-	721	640	-	-	-	-	-	-	-
Stage 1	860	774	-	934	832	-	-	-	-	-	-	-
Stage 2	901	831	-	846	744	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.5		9.5			0.1			0.4			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1421	-	-	706	813	1533	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.066	0.025	0.006	-	-				
HCM Control Delay (s)	7.5	0	-	10.5	9.5	7.4	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				



# HCM 6th Signalized Intersection Summary




## 5: Park Ave & W 14th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	26	12	14	16	19	11	710	16	5	727	7
Future Volume (veh/h)	20	26	12	14	16	19	11	710	16	5	727	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	29	1	16	18	2	12	789	16	6	808	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	98	3	263	91	9	559	2002	41	564	2027	20
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	675	952	32	676	888	92	669	3560	72	675	3604	36
Grp Volume(v), veh/h	52	0	0	36	0	0	12	394	411	6	398	418
Grp Sat Flow(s),veh/h/ln	1658	0	0	1657	0	0	669	1777	1855	675	1777	1863
Q Serve(g_s), s	0.3	0.0	0.0	0.0	0.0	0.0	0.3	3.3	3.3	0.1	3.4	3.4
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.5	0.0	0.0	3.7	3.3	3.3	3.5	3.4	3.4
Prop In Lane	0.42		0.02	0.44		0.06	1.00		0.04	1.00		0.02
Lane Grp Cap(c), veh/h	361	0	0	364	0	0	559	999	1043	564	999	1048
V/C Ratio(X)	0.14	0.00	0.00	0.10	0.00	0.00	0.02	0.39	0.39	0.01	0.40	0.40
Avail Cap(c_a), veh/h	1703	0	0	1682	0	0	1427	3306	3451	1441	3306	3466
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.0	0.0	0.0	4.4	3.3	3.3	4.3	3.3	3.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.3	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	0.0	11.1	0.0	0.0	4.4	3.7	3.7	4.3	3.7	3.7
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		52			36			817			822	
Approach Delay, s/veh		11.2			11.1			3.7			3.7	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.1		6.8		20.1		6.8				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		5.7		2.7		5.5		2.5				
Green Ext Time (p_c), s		9.3		0.1		9.3		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			4.1									
HCM 6th LOS			A									




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	18	26	7	16	27
Future Vol, veh/h	8	18	26	7	16	27
Conflicting Peds, #/hr	7	0	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	9	20	29	8	18	30
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	114	41	0	0	45	0
Stage 1	41	-	-	-	-	-
Stage 2	73	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	887	1036	-	-	1576	-
Stage 1	987	-	-	-	-	-
Stage 2	955	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	863	1028	-	-	1564	-
Mov Cap-2 Maneuver	863	-	-	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	937	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		2.7		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 971		1564	-	
HCM Lane V/C Ratio	-	- 0.03		0.011	-	
HCM Control Delay (s)	-	- 8.8		7.3	0	
HCM Lane LOS	-	- A		A	A	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	3.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	17	18	26	26	10
Future Vol, veh/h	4	17	18	26	26	10
Conflicting Peds, #/hr	0	7	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	4	19	20	29	29	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	111	49	47	0	-	0
Stage 1	42	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	891	1025	1573	-	-	-
Stage 1	986	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	867	1011	1563	-	-	-
Mov Cap-2 Maneuver	867	-	-	-	-	-
Stage 1	966	-	-	-	-	-
Stage 2	952	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	3		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1563	-	980	-	-	
HCM Lane V/C Ratio	0.013	-	0.024	-	-	
HCM Control Delay (s)	7.3	0	8.8	-	-	
HCM Lane LOS	A	A	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	



















HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	2	3	4	0	26	6	3	25	1
Future Vol, veh/h	0	0	0	2	3	4	0	26	6	3	25	1
Conflicting Peds, #/hr	0	0	0	1	0	0	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	2	3	4	0	29	7	3	28	1
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	71	73	30	71	70	35	29	0	0	38	0	0
Stage 1	35	35	-	35	35	-	-	-	-	-	-	-
Stage 2	36	38	-	36	35	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	925	821	1050	925	824	1044	1597	-	-	1585	-	-
Stage 1	986	870	-	986	870	-	-	-	-	-	-	-
Stage 2	985	867	-	985	870	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	917	818	1049	921	821	1042	1597	-	-	1582	-	-
Mov Cap-2 Maneuver	917	818	-	921	821	-	-	-	-	-	-	-
Stage 1	986	868	-	984	868	-	-	-	-	-	-	-
Stage 2	977	865	-	982	868	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		8.9		0		0.8					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1597	-	-	-	931	1582	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.011	0.002	-	-				
HCM Control Delay (s)	0	-	-	0	8.9	7.3	0	-				
HCM Lane LOS	A	-	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-				

# HCM 6th Signalized Intersection Summary 8: Park Ave & W 16th St/E 16th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	28	28	16	32	20	19	717	20	10	723	9
Future Volume (veh/h)	16	28	28	16	32	20	19	717	20	10	723	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.99	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	18	31	3	18	36	2	21	797	20	11	803	9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	153	13	218	164	8	537	1969	49	535	2003	22
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.56	0.56	0.56	0.56	0.56	0.56
Sat Flow, veh/h	426	1165	97	400	1243	61	670	3539	89	667	3599	40
Grp Volume(v), veh/h	52	0	0	56	0	0	21	400	417	11	396	416
Grp Sat Flow(s),veh/h/ln	1688	0	0	1704	0	0	670	1777	1851	667	1777	1863
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.7	3.7	0.3	3.7	3.7
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.8	0.0	0.0	4.2	3.7	3.7	4.0	3.7	3.7
Prop In Lane	0.35		0.06	0.32		0.04	1.00		0.05	1.00		0.02
Lane Grp Cap(c), veh/h	390	0	0	389	0	0	537	989	1030	535	989	1036
V/C Ratio(X)	0.13	0.00	0.00	0.14	0.00	0.00	0.04	0.40	0.40	0.02	0.40	0.40
Avail Cap(c_a), veh/h	1592	0	0	1605	0	0	1327	3081	3209	1321	3081	3230
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.2	0.0	0.0	11.2	0.0	0.0	4.9	3.7	3.7	4.8	3.7	3.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.4	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.0	0.4	0.5	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.2	0.0	0.0	11.3	0.0	0.0	4.9	4.0	4.0	4.8	4.0	4.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		52			56			838			823	
Approach Delay, s/veh		11.2			11.3			4.1			4.0	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		21.0		7.8		21.0		7.8				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		6.2		2.7		6.0		2.8				
Green Ext Time (p_c), s		9.6		0.1		9.3		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			4.5									
HCM 6th LOS			A									





HCM 6th AWSC  
9: Broadway St & W 16th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection

Intersection Delay, s/veh 7.2

Intersection LOS A




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	41	2	5	34	7	2	13	4	3	14	8
Future Vol, veh/h	2	41	2	5	34	7	2	13	4	3	14	8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	2	46	2	6	38	8	2	14	4	3	16	9
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.3	7.2	7.1	7.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	4%	11%	12%
Vol Thru, %	68%	91%	74%	56%
Vol Right, %	21%	4%	15%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	45	46	25
LT Vol	2	2	5	3
Through Vol	13	41	34	14
RT Vol	4	2	7	8
Lane Flow Rate	21	50	51	28
Geometry Grp	1	1	1	1
Degree of Util (X)	0.023	0.056	0.056	0.03
Departure Headway (Hd)	3.989	4.006	3.954	3.921
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	892	893	905	908
Service Time	2.038	2.034	1.982	1.969
HCM Lane V/C Ratio	0.024	0.056	0.056	0.031
HCM Control Delay	7.1	7.3	7.2	7.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.2	0.1

Intersection

Int Delay, s/veh 3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	1	34	18	0
Future Vol, veh/h	0	0	1	34	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1	38	20	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	39	0	0 20 20
Stage 1	-	-	- 20 -
Stage 2	-	-	- 0 -
Critical Hdwy	4.12	-	- 6.42 6.22
Critical Hdwy Stg 1	-	-	- 5.42 -
Critical Hdwy Stg 2	-	-	- 5.42 -
Follow-up Hdwy	2.218	-	- 3.518 3.318
Pot Cap-1 Maneuver	1571	-	- 997 1058
Stage 1	-	-	- 1003 -
Stage 2	-	-	- - -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1571	-	- 997 1058
Mov Cap-2 Maneuver	-	-	- 997 -
Stage 1	-	-	- 1003 -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1571	-	-	-	997
HCM Lane V/C Ratio	-	-	-	-	0.02
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	5	0	17	1	0	7	26	763	0	5	768	6
Future Vol, veh/h	5	0	17	1	0	7	26	763	0	5	768	6
Conflicting Peds, #/hr	0	0	0	1	0	1	8	0	1	8	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	0	19	1	0	8	29	848	0	6	853	7

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1360	1791	439	1354	1794	433	868	0	0	856	0	0
Stage 1	877	877	-	914	914	-	-	-	-	-	-	-
Stage 2	483	914	-	440	880	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	107	80	566	108	80	571	772	-	-	780	-	-
Stage 1	310	364	-	294	350	-	-	-	-	-	-	-
Stage 2	534	350	-	566	363	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	101	75	561	100	75	566	766	-	-	774	-	-
Mov Cap-2 Maneuver	101	75	-	100	75	-	-	-	-	-	-	-
Stage 1	296	358	-	281	334	-	-	-	-	-	-	-
Stage 2	506	334	-	542	357	-	-	-	-	-	-	-





Approach	EB		WB		NB		SB	
HCM Control Delay, s	19.3		15.3		0.3		0.1	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	766	-	-	276	358	774	-
HCM Lane V/C Ratio	0.038	-	-	0.089	0.025	0.007	-
HCM Control Delay (s)	9.9	-	-	19.3	15.3	9.7	-
HCM Lane LOS	A	-	-	C	C	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.1	0	-







HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	5	0	4	9	3	1	13	3	2	12	1
Future Vol, veh/h	2	5	0	4	9	3	1	13	3	2	12	1
Conflicting Peds, #/hr	1	0	0	0	0	1	7	0	3	7	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	2	6	0	4	10	3	1	14	3	2	13	1
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	50	51	21	46	50	24	21	0	0	24	0	0
Stage 1	25	25	-	25	25	-	-	-	-	-	-	-
Stage 2	25	26	-	21	25	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	945	837	1051	950	838	1047	1582	-	-	1578	-	-
Stage 1	988	870	-	988	870	-	-	-	-	-	-	-
Stage 2	988	870	-	992	870	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	925	824	1044	938	825	1039	1571	-	-	1567	-	-
Mov Cap-2 Maneuver	925	824	-	938	825	-	-	-	-	-	-	-
Stage 1	980	863	-	980	863	-	-	-	-	-	-	-
Stage 2	972	863	-	985	863	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.3		9.1			0.4			1			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1571	-	-	851	886	1567	-	-				
HCM Lane V/C Ratio	0.001	-	-	0.009	0.02	0.001	-	-				
HCM Control Delay (s)	7.3	0	-	9.3	9.1	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0	0.1	0	-	-				

HCM 6th TWSC  
13: Normal Ave & W 18th St
















Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	7.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	5	1	0	12	3	3	15	0
Future Vol, veh/h	0	0	0	2	5	1	0	12	3	3	15	0
Conflicting Peds, #/hr	0	0	1	1	0	0	4	0	2	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	2	6	1	0	13	3	3	17	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	7	0	0	2	0	0	25	13	6	24	13	11
Stage 1	-	-	-	-	-	-	2	2	-	11	11	-
Stage 2	-	-	-	-	-	-	23	11	-	13	2	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1614	-	-	1620	-	-	986	881	1077	987	881	1070
Stage 1	-	-	-	-	-	-	1021	894	-	1010	886	-
Stage 2	-	-	-	-	-	-	995	886	-	1007	894	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1614	-	-	1618	-	-	966	879	1072	968	879	1066
Mov Cap-2 Maneuver	-	-	-	-	-	-	966	879	-	968	879	-
Stage 1	-	-	-	-	-	-	1020	893	-	1010	885	-
Stage 2	-	-	-	-	-	-	972	885	-	985	893	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			1.8			9			9.1		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	912	1614	-	-	1618	-	-	893				
HCM Lane V/C Ratio	0.018	-	-	-	0.001	-	-	0.022				
HCM Control Delay (s)	9	0	-	-	7.2	0	-	9.1				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				




# HCM 6th Signalized Intersection Summary

## 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	123	317	471	141	346	442
Future Volume (veh/h)	123	317	471	141	346	442
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	137	65	523	157	384	491
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	457	624	1047	455	465	2333
Arrive On Green	0.13	0.13	0.29	0.29	0.26	0.66
Sat Flow, veh/h	3456	1585	3647	1543	1781	3647
Grp Volume(v), veh/h	137	65	523	157	384	491
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1543	1781	1777
Q Serve(g_s), s	1.8	1.3	6.0	4.0	10.1	2.7
Cycle Q Clear(g_c), s	1.8	1.3	6.0	4.0	10.1	2.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	457	624	1047	455	465	2333
V/C Ratio(X)	0.30	0.10	0.50	0.35	0.83	0.21
Avail Cap(c_a), veh/h	1391	1052	3219	1398	896	2503
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.5	9.5	14.5	13.8	17.3	3.4
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.6	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.4	2.0	1.3	3.9	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.6	9.6	15.0	14.4	21.0	3.4
LnGrp LOS	B	A	B	B	C	A
Approach Vol, veh/h	202		680			875
Approach Delay, s/veh	16.4		14.9			11.2
Approach LOS	B		B			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	38.1		18.0		20.1	11.6
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 35		25.0		45.0	20.0
Max Q Clear Time (g_c+I1), s	4.7		12.1		8.0	3.8
Green Ext Time (p_c), s	3.2		1.0		6.3	0.3
Intersection Summary						
HCM 6th Ctrl Delay			13.2			
HCM 6th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	21	0	612	543	22
Future Vol, veh/h	0	21	0	612	543	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	0	680	603	24
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	314	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	682	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	682	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.5	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 682		-	-		
HCM Lane V/C Ratio	- 0.034		-	-		
HCM Control Delay (s)	- 10.5		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	1	12	4	1	8
Future Vol, veh/h	3	1	12	4	1	8
Conflicting Peds, #/hr	2	2	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	3	1	13	4	1	9

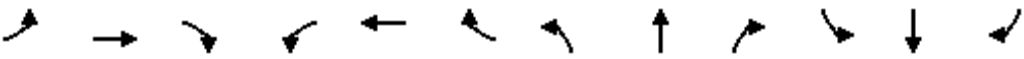
Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	30	19	0
Stage 1	17	-	-
Stage 2	13	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	982	1056	-
Stage 1	1003	-	-
Stage 2	1007	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	977	1052	-
Mov Cap-2 Maneuver	977	-	-
Stage 1	1001	-	-
Stage 2	1004	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	0.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	995	1588
HCM Lane V/C Ratio	-	-	0.004	0.001
HCM Control Delay (s)	-	-	8.6	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0

# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↕		↗	↕	
Traffic Volume (veh/h)	26	0	3	7	0	10	17	546	6	20	504	22
Future Volume (veh/h)	26	0	3	7	0	10	17	546	6	20	504	22
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	0.99		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	29	0	-5	8	0	3	19	607	6	22	560	21
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	443	78	0	176	0	15	745	2724	27	726	2637	99
Arrive On Green	0.04	0.00	0.00	0.04	0.00	0.04	0.76	0.76	0.76	0.76	0.76	0.76
Sat Flow, veh/h	1743	0	-300	1055	0	395	831	3604	36	807	3489	131
Grp Volume(v), veh/h	0	0	0	11	0	0	19	299	314	22	285	296
Grp Sat Flow(s),veh/h/ln	0	0	0	1450	0	0	831	1777	1863	807	1777	1843
Q Serve(g_s), s	0.0	0.0	0.0	0.3	0.0	0.0	0.3	2.3	2.3	0.4	2.2	2.2
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.3	0.0	0.0	2.5	2.3	2.3	2.7	2.2	2.2
Prop In Lane	1.21		-0.21	0.73		0.27	1.00		0.02	1.00		0.07
Lane Grp Cap(c), veh/h	0	0	0	191	0	0	745	1343	1408	726	1343	1393
V/C Ratio(X)	0.00	0.00	0.00	0.06	0.00	0.00	0.03	0.22	0.22	0.03	0.21	0.21
Avail Cap(c_a), veh/h	0	0	0	620	0	0	745	1343	1408	726	1343	1393
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	21.5	0.0	0.0	2.0	1.7	1.7	2.1	1.6	1.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.4	0.4	0.1	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	21.7	0.0	0.0	2.1	2.0	2.0	2.1	2.0	2.0
LnGrp LOS	A	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			11			632			603	
Approach Delay, s/veh		0.0			21.7			2.0			2.0	
Approach LOS					C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		6.3		40.0		6.3				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		35.0		15.5		35.0		15.5				
Max Q Clear Time (g_c+I1), s		4.5		0.0		4.7		2.3				
Green Ext Time (p_c), s		5.6		0.0		5.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			2.2									
HCM 6th LOS			A									

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

Intersection

Int Delay, s/veh 1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	7	5	5	5
Future Vol, veh/h	0	0	7	5	5	5
Conflicting Peds, #/hr	0	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	8	6	6	6

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	29	15	0
Stage 1	11	-	-
Stage 2	18	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	983	1062	-
Stage 1	1009	-	-
Stage 2	1002	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	979	1058	-
Mov Cap-2 Maneuver	979	-	-
Stage 1	1009	-	-
Stage 2	998	-	-





















Approach	WB	NB	SB
HCM Control Delay, s	0	0	3.6
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	-	1598
HCM Lane V/C Ratio	-	-	-	0.003
HCM Control Delay (s)	-	-	0	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	-	0

# HCM 6th Signalized Intersection Summary

## 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (veh/h)	0	0	0	429	9	239	0	187	562	363	199	0		
Future Volume (veh/h)	0	0	0	429	9	239	0	187	562	363	199	0		
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Work Zone On Approach	No			No			No			No				
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856		
Adj Flow Rate, veh/h	0	0	0	484	0	0	0	208	0	312	348	0		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90		
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3		
Cap, veh/h	0	4	0	833	0		0	300		454	477	0		
Arrive On Green	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.16	0.00	0.26	0.26	0.00		
Sat Flow, veh/h	0	1856	0	3527	0	1572	0	1856	1572	1767	1856	0		
Grp Volume(v), veh/h	0	0	0	484	0	0	0	208	0	312	348	0		
Grp Sat Flow(s),veh/h/ln	0	1856	0	1763	0	1572	0	1856	1572	1767	1856	0		
Q Serve(g_s), s	0.0	0.0	0.0	5.1	0.0	0.0	0.0	4.5	0.0	6.7	7.3	0.0		
Cycle Q Clear(g_c), s	0.0	0.0	0.0	5.1	0.0	0.0	0.0	4.5	0.0	6.7	7.3	0.0		
Prop In Lane	0.00		0.00	1.00		1.00	0.00		1.00	1.00		0.00		
Lane Grp Cap(c), veh/h	0	4	0	833	0		0	300		454	477	0		
V/C Ratio(X)	0.00	0.00	0.00	0.58	0.00		0.00	0.69		0.69	0.73	0.00		
Avail Cap(c_a), veh/h	0	834	0	2920	0		0	1536		1463	1536	0		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	0.0	0.0	0.0	14.3	0.0	0.0	0.0	16.7	0.0	14.2	14.4	0.0		
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.9	0.0	0.0	0.0	2.2	0.0	0.7	0.8	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	1.7	0.0	0.0	0.0	1.8	0.0	2.1	2.4	0.0		
Unsig. Movement Delay, s/veh														
LnGrp Delay(d),s/veh	0.0	0.0	0.0	15.2	0.0	0.0	0.0	18.9	0.0	14.9	15.2	0.0		
LnGrp LOS	A	A	A	B	A		A	B		B	B	A		
Approach Vol, veh/h	0				484			208			660			
Approach Delay, s/veh	0.0				15.2			18.9			15.0			
Approach LOS					B			B			B			
Timer - Assigned Phs	2			4			6			8				
Phs Duration (G+Y+Rc), s	11.8			14.6			15.9			0.0				
Change Period (Y+Rc), s	5.0			4.6			5.0			4.6				
Max Green Setting (Gmax), s	35.0			35.0			35.0			19.0				
Max Q Clear Time (g_c+I1), s	6.5			7.1			9.3			0.0				
Green Ext Time (p_c), s	0.9			2.8			1.6			0.0				

### Intersection Summary

HCM 6th Ctrl Delay	15.7
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.



# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	1019	68	159	571	0	0	0	0	819	1	492
Future Volume (veh/h)	0	1019	68	159	571	0	0	0	0	819	1	492
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1885	1885	1885	1885	0				1885	1885	1885
Adj Flow Rate, veh/h	0	1073	25	167	601	0				863	0	518
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	1	1	1	1	0				1	1	1
Cap, veh/h	0	1252	558	418	1965	0				996	0	886
Arrive On Green	0.00	0.35	0.35	0.12	0.55	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3676	1598	3483	3676	0				3591	0	3195
Grp Volume(v), veh/h	0	1073	25	167	601	0				863	0	518
Grp Sat Flow(s),veh/h/ln	0	1791	1598	1742	1791	0				1795	0	1598
Q Serve(g_s), s	0.0	17.6	0.7	2.8	5.8	0.0				14.4	0.0	8.8
Cycle Q Clear(g_c), s	0.0	17.6	0.7	2.8	5.8	0.0				14.4	0.0	8.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1252	558	418	1965	0				996	0	886
V/C Ratio(X)	0.00	0.86	0.04	0.40	0.31	0.00				0.87	0.00	0.58
Avail Cap(c_a), veh/h	0	1644	733	1103	3062	0				1421	0	1264
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.1	13.6	25.7	7.7	0.0				21.7	0.0	19.7
Incr Delay (d2), s/veh	0.0	3.0	0.0	0.2	0.0	0.0				3.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.0	0.2	1.1	1.8	0.0				6.0	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	22.1	13.6	25.9	7.8	0.0				24.8	0.0	19.9
LnGrp LOS	A	C	B	C	A	A				C	A	B
Approach Vol, veh/h		1098			768						1381	
Approach Delay, s/veh		21.9			11.7						23.0	
Approach LOS		C			B						C	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.6	28.1		22.5		40.7						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	14.8	19.6		16.4		7.8						
Green Ext Time (p_c), s	0.1	2.5		1.1		1.7						

## Intersection Summary

HCM 6th Ctrl Delay 19.9  
HCM 6th LOS B

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Existing Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑			↑↑	↰	↰	↰	↰			
Traffic Volume (veh/h)	437	1401	0	0	650	778	80	0	200	0	0	0
Future Volume (veh/h)	437	1401	0	0	650	778	80	0	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1885	1885	0	0	1885	1885	1885	1885	1885			
Adj Flow Rate, veh/h	460	1475	0	0	684	364	84	0	128			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	643	2125	0	0	1068	469	590	0	262			
Arrive On Green	0.18	0.59	0.00	0.00	0.30	0.30	0.16	0.00	0.16			
Sat Flow, veh/h	3483	3676	0	0	3676	1574	3591	0	1598			
Grp Volume(v), veh/h	460	1475	0	0	684	364	84	0	128			
Grp Sat Flow(s),veh/h/ln	1742	1791	0	0	1791	1574	1795	0	1598			
Q Serve(g_s), s	5.6	12.9	0.0	0.0	7.5	9.6	0.9	0.0	3.3			
Cycle Q Clear(g_c), s	5.6	12.9	0.0	0.0	7.5	9.6	0.9	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	643	2125	0	0	1068	469	590	0	262			
V/C Ratio(X)	0.72	0.69	0.00	0.00	0.64	0.78	0.14	0.00	0.49			
Avail Cap(c_a), veh/h	1537	4266	0	0	2291	1007	1980	0	881			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	17.4	6.4	0.0	0.0	13.8	14.5	16.2	0.0	17.2			
Incr Delay (d2), s/veh	0.6	0.2	0.0	0.0	0.2	1.1	0.0	0.0	0.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.0	2.9	0.0	0.0	2.6	3.0	0.3	0.0	1.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.9	6.5	0.0	0.0	14.0	15.6	16.3	0.0	17.7			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h	1935			1048			212					
Approach Delay, s/veh	9.2			14.6			17.1					
Approach LOS	A			B			B					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	32.9			13.4			19.5			12.4		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	14.9			7.6			11.6			5.3		
Green Ext Time (p_c), s	5.3			0.8			1.9			0.3		

## Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix B –  
**Existing Plus Project  
Conditions**

Peak Hour Traffic Volume  
Forecasts, Lane Configurations,  
and Technical Calculations




HCM 6th TWSC  
1a: Park Ave & W 11th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑	↑↑	
Traffic Vol, veh/h	35	35	40	710	560	190
Future Vol, veh/h	35	35	40	710	560	190
Conflicting Peds, #/hr	0	0	7	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	39	39	44	789	622	211
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1218	424	840	0	-	0
Stage 1	735	-	-	-	-	-
Stage 2	483	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	172	576	784	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	583	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	152	572	779	-	-	-
Mov Cap-2 Maneuver	152	-	-	-	-	-
Stage 1	387	-	-	-	-	-
Stage 2	579	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	27	0.5		0		
HCM LOS	D					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	779	-	240	-	-	
HCM Lane V/C Ratio	0.057	-	0.324	-	-	
HCM Control Delay (s)	9.9	-	27	-	-	
HCM Lane LOS	A	-	D	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.3	-	-	

HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour


Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	720	10	15	580
Future Vol, veh/h	10	30	720	10	15	580
Conflicting Peds, #/hr	0	0	0	7	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	33	800	11	17	644
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1169	413	0	0	818	0
Stage 1	813	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	185	585	-	-	800	-
Stage 1	394	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	178	581	-	-	795	-
Mov Cap-2 Maneuver	297	-	-	-	-	-
Stage 1	391	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.5	0		0.2		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	469	795	-	
HCM Lane V/C Ratio	-	-	0.095	0.021	-	
HCM Control Delay (s)	-	-	13.5	9.6	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-	

# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Existing Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑			↑	
Traffic Volume (veh/h)	0	0	0	105	540	120	90	230	0	0	105	5
Future Volume (veh/h)	0	0	0	105	540	120	90	230	0	0	105	5
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.98		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h				117	600	91	100	256	0	0	117	6
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				167	894	142	288	419	0	0	546	28
Arrive On Green				0.33	0.33	0.33	0.31	0.31	0.00	0.00	0.31	0.31
Sat Flow, veh/h				499	2681	426	343	1341	0	0	1744	89
Grp Volume(v), veh/h				429	0	379	356	0	0	0	0	123
Grp Sat Flow(s),veh/h/ln				1831	0	1777	1683	0	0	0	0	1833
Q Serve(g_s), s				5.2	0.0	4.6	2.6	0.0	0.0	0.0	0.0	1.3
Cycle Q Clear(g_c), s				5.2	0.0	4.6	4.5	0.0	0.0	0.0	0.0	1.3
Prop In Lane				0.27		0.24	0.28		0.00	0.00		0.05
Lane Grp Cap(c), veh/h				610	0	592	708	0	0	0	0	574
V/C Ratio(X)				0.70	0.00	0.64	0.50	0.00	0.00	0.00	0.00	0.21
Avail Cap(c_a), veh/h				1798	0	1745	1158	0	0	0	0	1081
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				7.4	0.0	7.2	7.5	0.0	0.0	0.0	0.0	6.4
Incr Delay (d2), s/veh				0.6	0.0	0.4	0.2	0.0	0.0	0.0	0.0	0.1
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				2.0	0.0	1.7	1.6	0.0	0.0	0.0	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				7.9	0.0	7.6	7.7	0.0	0.0	0.0	0.0	6.5
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					808			356			123	
Approach Delay, s/veh					7.8			7.7			6.5	
Approach LOS					A			A			A	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		13.5		12.0				12.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		7.2		3.3				6.5				
Green Ext Time (p_c), s		1.2		0.2				0.6				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				7.6								
HCM 6th LOS				A								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Existing Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	5	725	110	0	0	0	0	310	90	65	150	0
Future Volume (veh/h)	5	725	110	0	0	0	0	310	90	65	150	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.95	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h	6	806	88				0	344	72	72	167	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	8	1136	131				0	500	105	222	354	0
Arrive On Green	0.35	0.35	0.35				0.00	0.34	0.34	0.34	0.34	0.00
Sat Flow, veh/h	23	3241	374				0	1473	308	177	1041	0
Grp Volume(v), veh/h	480	0	420				0	0	416	239	0	0
Grp Sat Flow(s),veh/h/ln	1854	0	1783				0	0	1781	1218	0	0
Q Serve(g_s), s	6.6	0.0	5.8				0.0	0.0	5.8	0.5	0.0	0.0
Cycle Q Clear(g_c), s	6.6	0.0	5.8				0.0	0.0	5.8	6.3	0.0	0.0
Prop In Lane	0.01		0.21				0.00		0.17	0.30		0.00
Lane Grp Cap(c), veh/h	650	0	625				0	0	605	575	0	0
V/C Ratio(X)	0.74	0.00	0.67				0.00	0.00	0.69	0.42	0.00	0.00
Avail Cap(c_a), veh/h	1597	0	1536				0	0	920	831	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	0.0	8.0				0.0	0.0	8.3	7.4	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.5				0.0	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.9	0.0	2.5				0.0	0.0	2.5	1.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	0.0	8.5				0.0	0.0	8.8	7.6	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h		900						416			239	
Approach Delay, s/veh		8.7						8.8			7.6	
Approach LOS		A						A			A	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		15.2		13.9				13.9				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		8.6		8.3				7.8				
Green Ext Time (p_c), s		1.3		0.3				0.6				

### Intersection Summary

HCM 6th Ctrl Delay	8.5
HCM 6th LOS	A

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour



















Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	0	5	5	10	0	345	5	5	215	25
Future Vol, veh/h	40	5	0	5	5	10	0	345	5	5	215	25
Conflicting Peds, #/hr	7	0	2	2	0	7	23	0	24	14	0	13
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	44	6	0	6	6	11	0	383	6	6	239	28
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	690	701	278	680	712	417	290	0	0	413	0	0
Stage 1	288	288	-	410	410	-	-	-	-	-	-	-
Stage 2	402	413	-	270	302	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	358	362	758	364	356	634	1266	-	-	1141	-	-
Stage 1	717	672	-	617	594	-	-	-	-	-	-	-
Stage 2	623	592	-	734	662	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	336	344	740	349	338	615	1238	-	-	1115	-	-
Mov Cap-2 Maneuver	336	344	-	349	338	-	-	-	-	-	-	-
Stage 1	701	653	-	603	580	-	-	-	-	-	-	-
Stage 2	602	578	-	722	643	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	17.5		13.6			0			0.2			
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1238	-	-	337	441	1115	-	-				
HCM Lane V/C Ratio	-	-	-	0.148	0.05	0.005	-	-				
HCM Control Delay (s)	0	-	-	17.5	13.6	8.2	0	-				
HCM Lane LOS	A	-	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-				



# HCM 6th Signalized Intersection Summary




## 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	40	70	5	60	10	50	535	5	10	525	5
Future Volume (veh/h)	10	40	70	5	60	10	50	535	5	10	525	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.98	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	44	8	6	67	1	56	594	5	11	583	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	199	177	30	170	232	3	621	1797	15	615	1797	15
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.50	0.50	0.50	0.50	0.50	0.50
Sat Flow, veh/h	218	1285	219	101	1686	24	820	3582	30	812	3582	31
Grp Volume(v), veh/h	63	0	0	74	0	0	56	292	307	11	287	301
Grp Sat Flow(s),veh/h/ln	1722	0	0	1811	0	0	820	1763	1849	812	1763	1850
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.1	2.5	2.5	0.2	2.4	2.4
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.9	0.0	0.0	3.5	2.5	2.5	2.7	2.4	2.4
Prop In Lane	0.17		0.13	0.08		0.01	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	406	0	0	405	0	0	621	885	928	615	885	928
V/C Ratio(X)	0.16	0.00	0.00	0.18	0.00	0.00	0.09	0.33	0.33	0.02	0.32	0.32
Avail Cap(c_a), veh/h	1868	0	0	1955	0	0	1852	3532	3706	1835	3532	3707
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	0.0	9.7	0.0	0.0	4.7	3.7	3.7	4.5	3.7	3.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.4	0.0	0.0	0.5	0.0	0.0	0.2	0.5	0.5	0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.7	0.0	0.0	9.7	0.0	0.0	4.8	4.0	4.0	4.5	4.0	4.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	A	A	A
Approach Vol, veh/h		63			74			655			599	
Approach Delay, s/veh		9.7			9.7			4.1			4.0	
Approach LOS		A			A			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		17.5		7.4		17.5		7.4				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		5.5		2.8		4.7		2.9				
Green Ext Time (p_c), s		6.8		0.2		6.2		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.6								
HCM 6th LOS				A								




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	6.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	110	35	5	110	25
Future Vol, veh/h	5	110	35	5	110	25
Conflicting Peds, #/hr	0	1	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	122	39	6	122	28
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	318	47	0	0	49	0
Stage 1	46	-	-	-	-	-
Stage 2	272	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	673	1019	-	-	1551	-
Stage 1	974	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	616	1014	-	-	1545	-
Mov Cap-2 Maneuver	616	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	709	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	9.2	0	6.1			
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	986	1545	-	
HCM Lane V/C Ratio	-	-	0.13	0.079	-	
HCM Control Delay (s)	-	-	9.2	7.5	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0.3	-	





HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	6.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	105	110	35	30	15
Future Vol, veh/h	25	105	110	35	30	15
Conflicting Peds, #/hr	1	2	2	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	28	117	122	39	33	17
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	330	48	54	0	-	0
Stage 1	46	-	-	-	-	-
Stage 2	284	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	663	1018	1545	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	762	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	605	1012	1539	-	-	-
Mov Cap-2 Maneuver	605	-	-	-	-	-
Stage 1	891	-	-	-	-	-
Stage 2	759	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	9.8	5.7		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1539	-	896	-	-	
HCM Lane V/C Ratio	0.079	-	0.161	-	-	
HCM Control Delay (s)	7.5	-	9.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.6	-	-	

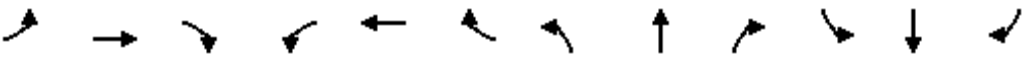
HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	3.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	110	5	5	100	5	5	25	5	5	35	25
Future Vol, veh/h	5	110	5	5	100	5	5	25	5	5	35	25
Conflicting Peds, #/hr	1	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	122	6	6	111	6	6	28	6	6	39	28
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	118	0	0	129	0	0	298	268	126	281	268	115
Stage 1	-	-	-	-	-	-	138	138	-	127	127	-
Stage 2	-	-	-	-	-	-	160	130	-	154	141	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1464	-	-	1451	-	-	652	636	922	669	636	935
Stage 1	-	-	-	-	-	-	863	780	-	874	789	-
Stage 2	-	-	-	-	-	-	840	787	-	846	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1463	-	-	1450	-	-	599	630	921	638	630	934
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	630	-	638	630	-
Stage 1	-	-	-	-	-	-	859	776	-	870	785	-
Stage 2	-	-	-	-	-	-	772	783	-	808	774	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.3			10.8			10.5		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	655	1463	-	-	1450	-	-	721				
HCM Lane V/C Ratio	0.059	0.004	-	-	0.004	-	-	0.1				
HCM Control Delay (s)	10.8	7.5	0	-	7.5	0	-	10.5				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3				

# HCM 6th Signalized Intersection Summary 8: Park Ave & W 16th St/E 16th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	115	115	195	25	135	30	125	440	55	15	530	15
Future Volume (veh/h)	115	115	195	25	135	30	125	440	55	15	530	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	128	128	158	28	150	22	139	489	48	17	589	16
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	237	191	196	136	482	64	451	1481	145	480	1605	44
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	382	580	594	119	1464	196	807	3235	316	859	3505	95
Grp Volume(v), veh/h	414	0	0	200	0	0	139	266	271	17	296	309
Grp Sat Flow(s),veh/h/ln	1555	0	0	1779	0	0	807	1763	1788	859	1763	1838
Q Serve(g_s), s	6.6	0.0	0.0	0.0	0.0	0.0	5.7	4.1	4.1	0.5	4.6	4.6
Cycle Q Clear(g_c), s	10.1	0.0	0.0	3.5	0.0	0.0	10.4	4.1	4.1	4.7	4.6	4.6
Prop In Lane	0.31		0.38	0.14		0.11	1.00		0.18	1.00		0.05
Lane Grp Cap(c), veh/h	624	0	0	683	0	0	451	807	819	480	807	842
V/C Ratio(X)	0.66	0.00	0.00	0.29	0.00	0.00	0.31	0.33	0.33	0.04	0.37	0.37
Avail Cap(c_a), veh/h	1012	0	0	1115	0	0	1034	2081	2111	1100	2081	2169
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	0.0	10.7	0.0	0.0	10.9	7.3	7.3	8.8	7.5	7.5
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.1	0.0	0.0	0.5	0.3	0.3	0.0	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.3	0.0	0.0	2.1	0.0	0.0	1.6	2.1	2.1	0.2	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.2	0.0	0.0	10.8	0.0	0.0	11.4	7.7	7.7	8.9	7.9	7.9
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		414			200			676			622	
Approach Delay, s/veh		13.2			10.8			8.4			7.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		24.4		18.0		24.4		18.0				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		12.4		12.1		6.7		5.5				
Green Ext Time (p_c), s		7.0		1.7		6.4		0.8				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			9.5									
HCM 6th LOS			A									

Intersection

Intersection Delay, s/veh 11.6

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	395	5	5	255	10	5	10	15	10	5	5
Future Vol, veh/h	5	395	5	5	255	10	5	10	15	10	5	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	439	6	6	283	11	6	11	17	11	6	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.8	10.3	8.7	8.9
HCM LOS	B	B	A	A




Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	1%	2%	50%
Vol Thru, %	33%	98%	94%	25%
Vol Right, %	50%	1%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	405	270	20
LT Vol	5	5	5	10
Through Vol	10	395	255	5
RT Vol	15	5	10	5
Lane Flow Rate	33	450	300	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.05	0.552	0.379	0.035
Departure Headway (Hd)	5.352	4.414	4.548	5.592
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	666	819	792	637
Service Time	3.412	2.442	2.579	3.653
HCM Lane V/C Ratio	0.05	0.549	0.379	0.035
HCM Control Delay	8.7	12.8	10.3	8.9
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.2	3.4	1.8	0.1

HCM 6th TWSC  
10: W 16th St & Chestnut St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	340	230	25	20	5
Future Vol, veh/h	5	340	230	25	20	5
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	378	256	28	22	6

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	287	0	0 663 273
Stage 1	-	-	- 273 -
Stage 2	-	-	- 390 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1269	-	- 425 763
Stage 1	-	-	- 771 -
Stage 2	-	-	- 682 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1265	-	- 420 761
Mov Cap-2 Maneuver	-	-	- 420 -
Stage 1	-	-	- 764 -
Stage 2	-	-	- 680 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1265	-	-	-	461
HCM Lane V/C Ratio	0.004	-	-	-	0.06
HCM Control Delay (s)	7.9	0	-	-	13.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	20	5	135	5	5	5	40	580	5	5	710	25
Future Vol, veh/h	20	5	135	5	5	5	40	580	5	5	710	25
Conflicting Peds, #/hr	2	0	4	3	0	1	6	0	3	6	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	6	150	6	6	6	44	644	6	6	789	28

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1236	1565	419	1155	1576	333	823	0	0	656	0	0
Stage 1	821	821	-	741	741	-	-	-	-	-	-	-
Stage 2	415	744	-	414	835	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	131	109	580	151	108	660	796	-	-	921	-	-
Stage 1	333	384	-	372	419	-	-	-	-	-	-	-
Stage 2	583	417	-	584	379	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	118	101	574	101	100	655	791	-	-	916	-	-
Mov Cap-2 Maneuver	118	101	-	101	100	-	-	-	-	-	-	-
Stage 1	313	379	-	349	393	-	-	-	-	-	-	-
Stage 2	537	391	-	421	374	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	25.2		34.2		0.6		0.1	
HCM LOS	D		D					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	791	-	-	352 140	916	-	-
HCM Lane V/C Ratio	0.056	-	-	0.505 0.119	0.006	-	-
HCM Control Delay (s)	9.8	-	-	25.2 34.2	9	-	-
HCM Lane LOS	A	-	-	D D	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	2.7 0.4	0	-	-







HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	155	20	5	55	5	5	10	5	5	5	5
Future Vol, veh/h	25	155	20	5	55	5	5	10	5	5	5	5
Conflicting Peds, #/hr	3	0	1	0	0	2	3	0	1	3	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	28	172	22	6	61	6	6	11	6	6	6	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	87	56	13	148	56	20	15	0	0	20	0	0
Stage 1	24	24	-	29	29	-	-	-	-	-	-	-
Stage 2	63	32	-	119	27	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	896	833	1064	818	833	1055	1596	-	-	1590	-	-
Stage 1	991	873	-	985	869	-	-	-	-	-	-	-
Stage 2	945	866	-	883	871	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	831	821	1060	665	821	1049	1591	-	-	1585	-	-
Mov Cap-2 Maneuver	831	821	-	665	821	-	-	-	-	-	-	-
Stage 1	984	867	-	978	863	-	-	-	-	-	-	-
Stage 2	867	860	-	689	865	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.8		9.8		1.8		2.4					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1591	-	-	841	820	1585	-	-				
HCM Lane V/C Ratio	0.003	-	-	0.264	0.088	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	10.8	9.8	7.3	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.1	0.3	0	-	-				

HCM 6th TWSC  
13: Normal Ave & W 18th St













Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	205	20	5	80	5	0	20	5	5	15	15
Future Vol, veh/h	30	205	20	5	80	5	0	20	5	5	15	15
Conflicting Peds, #/hr	1	0	1	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	228	22	6	89	6	0	22	6	6	17	17
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	96	0	0	251	0	0	427	414	240	424	422	93
Stage 1	-	-	-	-	-	-	306	306	-	105	105	-
Stage 2	-	-	-	-	-	-	121	108	-	319	317	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1491	-	-	1309	-	-	536	527	796	539	522	961
Stage 1	-	-	-	-	-	-	702	660	-	898	806	-
Stage 2	-	-	-	-	-	-	881	804	-	690	652	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1490	-	-	1308	-	-	501	510	795	505	505	960
Mov Cap-2 Maneuver	-	-	-	-	-	-	501	510	-	505	505	-
Stage 1	-	-	-	-	-	-	683	642	-	874	801	-
Stage 2	-	-	-	-	-	-	843	799	-	644	634	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.4			11.9			11		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	549	1490	-	-	1308	-	-	634				
HCM Lane V/C Ratio	0.051	0.022	-	-	0.004	-	-	0.061				
HCM Control Delay (s)	11.9	7.5	0	-	7.8	0	-	11				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2				

# HCM 6th Signalized Intersection Summary

## 14a: Park Ave & E 20th St





Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	115	190	425	80	275	610
Future Volume (veh/h)	115	190	425	80	275	610
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.98	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	128	14	472	35	306	678
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	460	562	975	425	394	2178
Arrive On Green	0.13	0.13	0.28	0.28	0.22	0.62
Sat Flow, veh/h	3428	1572	3618	1536	1767	3618
Grp Volume(v), veh/h	128	14	472	35	306	678
Grp Sat Flow(s),veh/h/ln	1714	1572	1763	1536	1767	1763
Q Serve(g_s), s	1.4	0.2	4.7	0.7	6.9	3.9
Cycle Q Clear(g_c), s	1.4	0.2	4.7	0.7	6.9	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	460	562	975	425	394	2178
V/C Ratio(X)	0.28	0.02	0.48	0.08	0.78	0.31
Avail Cap(c_a), veh/h	1619	1094	3747	1633	1043	2914
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	8.8	12.8	11.3	15.5	3.8
Incr Delay (d2), s/veh	0.1	0.0	0.5	0.1	3.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	0.1	2.7	0.4	4.8	1.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.6	8.8	13.3	11.5	18.8	3.9
LnGrp LOS	B	A	B	B	B	A
Approach Vol, veh/h	142		507			984
Approach Delay, s/veh	15.8		13.2			8.5
Approach LOS	B		B			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	31.7		14.4		17.2	10.7
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 35		25.0		45.0	20.0
Max Q Clear Time (g_c+I1), s	5.9		8.9		6.7	3.4
Green Ext Time (p_c), s	5.2		0.8		4.9	0.2
Intersection Summary						
HCM 6th Ctrl Delay	10.6					
HCM 6th LOS	B					
Notes						
User approved pedestrian interval to be less than phase max green.						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	200	0	505	685	40
Future Vol, veh/h	0	200	0	505	685	40
Conflicting Peds, #/hr	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	222	0	561	761	44
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	404	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	593	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	592	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	14.7	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 592		-	-		
HCM Lane V/C Ratio	- 0.375		-	-		
HCM Control Delay (s)	- 14.7		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 1.7		-	-		



















HCM 6th TWSC  
15: Normal Ave & W 20th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	210	0	5	30	5	0	10	5	15	15	5
Future Vol, veh/h	15	210	0	5	30	5	0	10	5	15	15	5
Conflicting Peds, #/hr	1	0	1	0	0	0	0	0	1	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	17	233	0	6	33	6	0	11	6	17	17	6
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	89	72	21	187	72	16	23	0	0	18	0	0
Stage 1	54	54	-	15	15	-	-	-	-	-	-	-
Stage 2	35	18	-	172	57	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	894	817	1054	771	817	1060	1586	-	-	1592	-	-
Stage 1	956	848	-	1002	881	-	-	-	-	-	-	-
Stage 2	978	878	-	828	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	853	807	1053	593	807	1058	1586	-	-	1590	-	-
Mov Cap-2 Maneuver	853	807	-	593	807	-	-	-	-	-	-	-
Stage 1	956	839	-	1001	880	-	-	-	-	-	-	-
Stage 2	935	877	-	591	836	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	11.4			9.8			0			3.1		
HCM LOS	B			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1586	-	-	810	795	1590	-	-				
HCM Lane V/C Ratio	-	-	-	0.309	0.056	0.01	-	-				
HCM Control Delay (s)	0	-	-	11.4	9.8	7.3	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.3	0.2	0	-	-				

# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	5	105	5	5	10	120	455	10	20	810	20
Future Volume (veh/h)	35	5	105	5	5	10	120	455	10	20	810	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	39	6	31	6	6	0	133	506	9	22	900	20
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	171	9	45	158	82	0	541	2620	47	761	2605	58
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.00	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	779	120	619	618	1122	0	602	3544	63	878	3524	78
Grp Volume(v), veh/h	76	0	0	12	0	0	133	252	263	22	450	470
Grp Sat Flow(s),veh/h/ln	1518	0	0	1741	0	0	602	1763	1844	878	1763	1839
Q Serve(g_s), s	2.0	0.0	0.0	0.0	0.0	0.0	4.8	2.1	2.1	0.4	4.3	4.3
Cycle Q Clear(g_c), s	2.3	0.0	0.0	0.3	0.0	0.0	9.1	2.1	2.1	2.5	4.3	4.3
Prop In Lane	0.51		0.41	0.50		0.00	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	225	0	0	240	0	0	541	1303	1363	761	1303	1360
V/C Ratio(X)	0.34	0.00	0.00	0.05	0.00	0.00	0.25	0.19	0.19	0.03	0.35	0.35
Avail Cap(c_a), veh/h	597	0	0	632	0	0	541	1303	1363	761	1303	1360
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	0.0	20.8	0.0	0.0	3.8	1.9	1.9	2.3	2.2	2.2
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.1	0.0	0.0	1.1	0.3	0.3	0.1	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.5	0.0	0.0	0.2	0.0	0.0	0.7	0.3	0.3	0.1	0.6	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.5	0.0	0.0	20.8	0.0	0.0	4.9	2.2	2.2	2.4	2.9	2.9
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h	76			12			648			942		
Approach Delay, s/veh	22.5			20.8			2.8			2.9		
Approach LOS	C			C			A			A		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	40.0			8.0			40.0			8.0		
Change Period (Y+Rc), s	4.5			4.5			4.5			4.5		
Max Green Setting (Gmax), s	35.5			15.5			35.5			15.5		
Max Q Clear Time (g_c+I1), s	11.1			4.3			6.3			2.3		
Green Ext Time (p_c), s	4.3			0.2			6.3			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	3.9											
HCM 6th LOS	A											

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

Intersection

Int Delay, s/veh 4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	95	0	5	115	10	5
Future Vol, veh/h	95	0	5	115	10	5
Conflicting Peds, #/hr	0	0	0	0	2	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	106	0	6	128	11	6





















Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	100	72	0
Stage 1	72	-	-
Stage 2	28	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	896	987	-
Stage 1	948	-	-
Stage 2	992	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	887	985	-
Mov Cap-2 Maneuver	887	-	-
Stage 1	946	-	-
Stage 2	984	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	887	1439
HCM Lane V/C Ratio	-	-	0.119	0.008
HCM Control Delay (s)	-	-	9.6	7.5
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0

# HCM 6th Signalized Intersection Summary 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	365	10	485	0	230	485	655	325	0
Future Volume (veh/h)	0	0	0	365	10	485	0	230	485	655	325	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811	1811
Adj Flow Rate, veh/h	0	0	0	414	0	0	0	256	0	544	618	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	6	6	6	6	6	6	6	6	6	6	6	6
Cap, veh/h	0	3	0	629	0	0	0	332	0	681	715	0
Arrive On Green	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.18	0.00	0.39	0.39	0.00
Sat Flow, veh/h	0	1811	0	3440	0	1535	0	1811	1535	1725	1811	0
Grp Volume(v), veh/h	0	0	0	414	0	0	0	256	0	544	618	0
Grp Sat Flow(s),veh/h/ln	0	1811	0	1720	0	1535	0	1811	1535	1725	1811	0
Q Serve(g_s), s	0.0	0.0	0.0	6.8	0.0	0.0	0.0	8.2	0.0	17.0	19.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	6.8	0.0	0.0	0.0	8.2	0.0	17.0	19.1	0.0
Prop In Lane	0.00		0.00	1.00		1.00	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	3	0	629	0	0	0	332	0	681	715	0
V/C Ratio(X)	0.00	0.00	0.00	0.66	0.00	0.00	0.00	0.77	0.00	0.80	0.86	0.00
Avail Cap(c_a), veh/h	0	564	0	1972	0	0	0	1038	0	989	1038	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	23.2	0.0	0.0	0.0	23.7	0.0	16.3	17.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.7	0.0	0.0	0.0	2.8	0.0	1.8	3.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	4.7	0.0	0.0	0.0	6.2	0.0	9.8	11.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	24.8	0.0	0.0	0.0	26.5	0.0	18.1	20.9	0.0
LnGrp LOS	A	A	A	C	A		A	C		B	C	A
Approach Vol, veh/h	0				414				256			
Approach Delay, s/veh	0.0				24.8				26.5			
Approach LOS					C				C			
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	16.2			15.8			29.1			0.0		
Change Period (Y+Rc), s	5.0			4.6			5.0			4.6		
Max Green Setting (Gmax), s	35.0			35.0			35.0			19.0		
Max Q Clear Time (g_c+I1), s	10.2			8.8			21.1			0.0		
Green Ext Time (p_c), s	1.1			2.4			2.9			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	21.7											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												



# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	545	40	80	380	0	0	0	0	495	0	330
Future Volume (veh/h)	0	545	40	80	380	0	0	0	0	495	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1841	1841	1841	1841	0				1841	1841	1841
Adj Flow Rate, veh/h	0	606	10	89	422	0				550	0	86
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	4	4	4	4	0				4	4	4
Cap, veh/h	0	883	388	432	1775	0				737	0	656
Arrive On Green	0.00	0.25	0.25	0.13	0.51	0.00				0.21	0.00	0.21
Sat Flow, veh/h	0	3589	1538	3401	3589	0				3506	0	3120
Grp Volume(v), veh/h	0	606	10	89	422	0				550	0	86
Grp Sat Flow(s),veh/h/ln	0	1749	1538	1700	1749	0				1753	0	1560
Q Serve(g_s), s	0.0	6.1	0.2	0.9	2.6	0.0				5.7	0.0	0.9
Cycle Q Clear(g_c), s	0.0	6.1	0.2	0.9	2.6	0.0				5.7	0.0	0.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	883	388	432	1775	0				737	0	656
V/C Ratio(X)	0.00	0.69	0.03	0.21	0.24	0.00				0.75	0.00	0.13
Avail Cap(c_a), veh/h	0	2601	1144	1744	4843	0				2248	0	2000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.2	11.0	15.3	5.4	0.0				14.4	0.0	12.5
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.1	0.0	0.0				0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	3.5	0.1	0.6	1.1	0.0				3.4	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	13.5	11.0	15.3	5.4	0.0				15.0	0.0	12.5
LnGrp LOS	A	B	B	B	A	A				B	A	B
Approach Vol, veh/h		616			511						636	
Approach Delay, s/veh		13.5			7.1						14.7	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	9.9	15.8		13.2		25.8						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	12.5	8.1		7.7		4.6						
Green Ext Time (p_c), s	0.0	1.6		0.5		1.1						

## Intersection Summary

HCM 6th Ctrl Delay	12.1
HCM 6th LOS	B

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Existing Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	865	0	0	415	355	45	0	125	0	0	0
Future Volume (veh/h)	175	865	0	0	415	355	45	0	125	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1841	1841	0	0	1841	1841	1841	1841	1841			
Adj Flow Rate, veh/h	194	961	0	0	461	66	50	0	12			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	4	4	0	0	4	4	4	4	4			
Cap, veh/h	678	1985	0	0	767	337	367	0	163			
Arrive On Green	0.20	0.57	0.00	0.00	0.22	0.22	0.10	0.00	0.10			
Sat Flow, veh/h	3401	3589	0	0	3589	1538	3506	0	1560			
Grp Volume(v), veh/h	194	961	0	0	461	66	50	0	12			
Grp Sat Flow(s), veh/h/ln	1700	1749	0	0	1749	1538	1753	0	1560			
Q Serve(g_s), s	1.6	5.5	0.0	0.0	4.0	1.2	0.4	0.0	0.2			
Cycle Q Clear(g_c), s	1.6	5.5	0.0	0.0	4.0	1.2	0.4	0.0	0.2			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	678	1985	0	0	767	337	367	0	163			
V/C Ratio(X)	0.29	0.48	0.00	0.00	0.60	0.20	0.14	0.00	0.07			
Avail Cap(c_a), veh/h	2027	5628	0	0	3022	1329	2612	0	1162			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	11.4	4.3	0.0	0.0	11.8	10.7	13.6	0.0	13.6			
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.3	0.1	0.1	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	0.9	1.4	0.0	0.0	2.2	0.6	0.3	0.0	0.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.5	4.4	0.0	0.0	12.1	10.8	13.7	0.0	13.6			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h	1155			527			62					
Approach Delay, s/veh	5.6			11.9			13.7					
Approach LOS	A			B			B					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	25.0			11.7			13.4			8.5		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	7.5			3.6			6.0			2.4		
Green Ext Time (p_c), s	2.9			0.3			1.2			0.1		

## Intersection Summary

HCM 6th Ctrl Delay	7.8
HCM 6th LOS	A




## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.




HCM 6th TWSC  
1a: Park Ave & W 11th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	65	45	855	750	30
Future Vol, veh/h	10	65	45	855	750	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	72	50	950	833	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1425	433	866	0	-	0
Stage 1	850	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	126	571	773	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	109	571	773	-	-	-
Mov Cap-2 Maneuver	109	-	-	-	-	-
Stage 1	327	-	-	-	-	-
Stage 2	526	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	17.8	0.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	773	-	365	-	-	
HCM Lane V/C Ratio	0.065	-	0.228	-	-	
HCM Control Delay (s)	10	-	17.8	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-	

HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour


Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	880	5	10	805
Future Vol, veh/h	5	20	880	5	10	805
Conflicting Peds, #/hr	3	0	0	3	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	22	978	6	11	894
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1461	500	0	0	992	0
Stage 1	989	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	120	516	-	-	693	-
Stage 1	321	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	512	-	-	688	-
Mov Cap-2 Maneuver	233	-	-	-	-	-
Stage 1	318	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	14.3	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	413	688	-	
HCM Lane V/C Ratio	-	-	0.067	0.016	-	
HCM Control Delay (s)	-	-	14.3	10.3	-	
HCM Lane LOS	-	-	B	B	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Existing Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑			↑	
Traffic Volume (veh/h)	0	0	0	200	810	95	175	135	0	0	315	10
Future Volume (veh/h)	0	0	0	200	810	95	175	135	0	0	315	10
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	0.98		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				222	900	86	194	150	0	0	350	11
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				261	1115	111	293	191	0	0	666	21
Arrive On Green				0.41	0.41	0.41	0.37	0.37	0.00	0.00	0.37	0.37
Sat Flow, veh/h				642	2743	273	416	514	0	0	1796	56
Grp Volume(v), veh/h				635	0	573	344	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	0	1820	930	0	0	0	0	1853
Q Serve(g_s), s				12.7	0.0	11.0	8.8	0.0	0.0	0.0	0.0	6.2
Cycle Q Clear(g_c), s				12.7	0.0	11.0	15.0	0.0	0.0	0.0	0.0	6.2
Prop In Lane				0.35		0.15	0.56		0.00	0.00		0.03
Lane Grp Cap(c), veh/h				747	0	740	484	0	0	0	0	687
V/C Ratio(X)				0.85	0.00	0.77	0.71	0.00	0.00	0.00	0.00	0.53
Avail Cap(c_a), veh/h				1136	0	1125	484	0	0	0	0	687
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				10.9	0.0	10.4	13.8	0.0	0.0	0.0	0.0	9.9
Incr Delay (d2), s/veh				2.5	0.0	0.8	4.1	0.0	0.0	0.0	0.0	0.4
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln				7.5	0.0	6.0	5.5	0.0	0.0	0.0	0.0	3.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.4	0.0	11.2	17.9	0.0	0.0	0.0	0.0	10.3
LnGrp LOS				B	A	B	B	A	A	A	A	B
Approach Vol, veh/h					1208			344			361	
Approach Delay, s/veh					12.3			17.9			10.3	
Approach LOS					B			B			B	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		21.4		19.0				19.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		14.7		8.2				17.0				
Green Ext Time (p_c), s		1.7		0.5				0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				13.0								
HCM 6th LOS				B								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Existing Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	10	845	220	0	0	0	0	295	100	140	380	0
Future Volume (veh/h)	10	845	220	0	0	0	0	295	100	140	380	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.94	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	11	939	181				0	328	111	156	422	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	13	1161	237				0	500	169	186	307	0
Arrive On Green	0.39	0.39	0.39				0.00	0.38	0.38	0.38	0.38	0.00
Sat Flow, veh/h	34	2970	607				0	1313	444	182	805	0
Grp Volume(v), veh/h	611	0	520				0	0	439	578	0	0
Grp Sat Flow(s),veh/h/ln	1869	0	1742				0	0	1757	988	0	0
Q Serve(g_s), s	11.7	0.0	10.2				0.0	0.0	8.1	6.9	0.0	0.0
Cycle Q Clear(g_c), s	11.7	0.0	10.2				0.0	0.0	8.1	15.0	0.0	0.0
Prop In Lane	0.02		0.35				0.00		0.25	0.27		0.00
Lane Grp Cap(c), veh/h	730	0	681				0	0	669	492	0	0
V/C Ratio(X)	0.84	0.00	0.76				0.00	0.00	0.66	1.17	0.00	0.00
Avail Cap(c_a), veh/h	1186	0	1106				0	0	669	492	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.9	0.0	10.4				0.0	0.0	10.1	14.6	0.0	0.0
Incr Delay (d2), s/veh	1.4	0.0	0.7				0.0	0.0	1.9	98.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.7	0.0	5.2				0.0	0.0	4.7	26.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.2	0.0	11.1				0.0	0.0	11.9	112.8	0.0	0.0
LnGrp LOS	B	A	B				A	A	B	F	A	A
Approach Vol, veh/h		1131						439			578	
Approach Delay, s/veh		11.7						11.9			112.8	
Approach LOS		B						B			F	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		20.4		19.0				19.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		13.7		17.0				10.1				
Green Ext Time (p_c), s		1.7		0.0				0.5				

### Intersection Summary

HCM 6th Ctrl Delay 39.0

HCM 6th LOS D

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St



















Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	5	5	5	10	5	305	5	10	490	70
Future Vol, veh/h	40	5	5	5	5	10	5	305	5	10	490	70
Conflicting Peds, #/hr	3	0	5	5	0	3	24	0	22	35	0	37
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	6	6	6	6	11	6	339	6	11	544	78
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1008	1034	625	1005	1070	380	659	0	0	380	0	0
Stage 1	642	642	-	389	389	-	-	-	-	-	-	-
Stage 2	366	392	-	616	681	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	219	232	485	220	221	667	929	-	-	1178	-	-
Stage 1	463	469	-	635	608	-	-	-	-	-	-	-
Stage 2	653	606	-	478	450	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	199	212	466	201	202	643	896	-	-	1139	-	-
Mov Cap-2 Maneuver	199	212	-	201	202	-	-	-	-	-	-	-
Stage 1	443	446	-	609	583	-	-	-	-	-	-	-
Stage 2	629	581	-	457	428	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	27.9		17.6		0.1		0.1					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	896	-	-	212	307	1139	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.262	0.072	0.01	-	-				
HCM Control Delay (s)	9	0	-	27.9	17.6	8.2	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1	0.2	0	-	-				

# HCM 6th Signalized Intersection Summary

## 5: Park Ave & W 14th St/E 14th St




Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	130	115	20	165	20	165	770	20	5	735	10
Future Volume (veh/h)	20	130	115	20	165	20	165	770	20	5	735	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	144	77	22	183	15	183	856	20	6	817	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	99	217	108	102	316	24	481	2172	51	461	2198	30
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.61	0.61	0.61	0.61	0.61	0.61
Sat Flow, veh/h	83	1097	547	96	1591	123	661	3547	83	632	3589	48
Grp Volume(v), veh/h	243	0	0	220	0	0	183	429	447	6	404	424
Grp Sat Flow(s),veh/h/ln	1727	0	0	1811	0	0	661	1777	1853	632	1777	1860
Q Serve(g_s), s	1.0	0.0	0.0	0.0	0.0	0.0	9.1	5.9	5.9	0.2	5.4	5.4
Cycle Q Clear(g_c), s	6.1	0.0	0.0	5.2	0.0	0.0	14.6	5.9	5.9	6.1	5.4	5.4
Prop In Lane	0.09		0.32	0.10		0.07	1.00		0.04	1.00		0.03
Lane Grp Cap(c), veh/h	425	0	0	442	0	0	481	1088	1135	461	1088	1139
V/C Ratio(X)	0.57	0.00	0.00	0.50	0.00	0.00	0.38	0.39	0.39	0.01	0.37	0.37
Avail Cap(c_a), veh/h	972	0	0	1012	0	0	771	1868	1948	738	1868	1956
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	17.4	0.0	0.0	8.3	4.7	4.7	6.3	4.6	4.6
Incr Delay (d2), s/veh	0.5	0.0	0.0	0.3	0.0	0.0	0.7	0.3	0.3	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	0.0	0.0	3.6	0.0	0.0	1.9	2.5	2.6	0.0	2.3	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	0.0	0.0	17.7	0.0	0.0	9.0	5.0	5.0	6.3	4.9	4.9
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h	243		220				1059				834	
Approach Delay, s/veh	18.2		17.7				5.7				4.9	
Approach LOS	B		B				A				A	
Timer - Assigned Phs	2		4				6				8	
Phs Duration (G+Y+Rc), s	34.1		13.4				34.1				13.4	
Change Period (Y+Rc), s	5.0		4.0				5.0				4.0	
Max Green Setting (Gmax), s	50.0		25.0				50.0				25.0	
Max Q Clear Time (g_c+I1), s	16.6		8.1				8.1				7.2	
Green Ext Time (p_c), s	12.6		0.9				9.4				0.8	
Intersection Summary												
HCM 6th Ctrl Delay			7.8									
HCM 6th LOS			A									






HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	8.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	315	30	10	225	30
Future Vol, veh/h	10	315	30	10	225	30
Conflicting Peds, #/hr	10	3	0	8	8	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	350	33	11	250	33
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	590	50	0	0	52	0
Stage 1	47	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	470	1018	-	-	1554	-
Stage 1	975	-	-	-	-	-
Stage 2	582	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	385	1007	-	-	1542	-
Mov Cap-2 Maneuver	385	-	-	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	11	0		6.9		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	959	1542	-	
HCM Lane V/C Ratio	-	-	0.377	0.162	-	
HCM Control Delay (s)	-	-	11	7.8	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	1.8	0.6	-	





HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	10.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	60	225	315	30	30	20
Future Vol, veh/h	60	225	315	30	30	20
Conflicting Peds, #/hr	1	8	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	250	350	33	33	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	785	59	62	0	-	0
Stage 1	51	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	361	1007	1541	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	475	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	273	993	1531	-	-	-
Mov Cap-2 Maneuver	273	-	-	-	-	-
Stage 1	740	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.1	7.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1531	-	638	-	-	
HCM Lane V/C Ratio	0.229	-	0.496	-	-	
HCM Control Delay (s)	8	-	16.1	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	0.9	-	2.8	-	-	

HCM 6th TWSC  
7: Chestnut St & W 14th St



















Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	11.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	265	5	5	305	5	5	30	5	5	30	60
Future Vol, veh/h	5	265	5	5	305	5	5	30	5	5	30	60
Conflicting Peds, #/hr	1	0	1	4	0	3	0	0	2	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	294	6	6	339	6	6	33	6	6	33	67
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	303	132	71	283	162	41	100	0	0	41	0	0
Stage 1	79	79	-	50	50	-	-	-	-	-	-	-
Stage 2	224	53	-	233	112	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	649	759	991	669	730	1030	1493	-	-	1568	-	-
Stage 1	930	829	-	963	853	-	-	-	-	-	-	-
Stage 2	779	851	-	770	803	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	405	751	987	457	723	1025	1493	-	-	1565	-	-
Mov Cap-2 Maneuver	405	751	-	457	723	-	-	-	-	-	-	-
Stage 1	926	826	-	957	848	-	-	-	-	-	-	-
Stage 2	462	846	-	489	800	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.2		14.6		0.9		0.4					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1493	-	-	743	720	1565	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.411	0.486	0.004	-	-				
HCM Control Delay (s)	7.4	0	-	13.2	14.6	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	2	2.7	0	-	-				

# HCM 6th Signalized Intersection Summary

## 8: Park Ave & W 16th St/E 16th St





Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	165	160	55	215	20	355	835	40	10	815	30
Future Volume (veh/h)	110	165	160	55	215	20	355	835	40	10	815	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.99	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	183	141	61	239	18	394	928	40	11	906	29
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	189	134	108	361	25	358	2063	89	345	2091	67
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.60	0.60	0.60	0.60	0.60	0.60
Sat Flow, veh/h	336	635	449	193	1213	84	598	3465	149	580	3513	112
Grp Volume(v), veh/h	446	0	0	318	0	0	394	476	492	11	458	477
Grp Sat Flow(s),veh/h/ln	1420	0	0	1490	0	0	598	1777	1838	580	1777	1849
Q Serve(g_s), s	10.1	0.0	0.0	0.0	0.0	0.0	38.2	12.4	12.4	0.9	11.8	11.8
Cycle Q Clear(g_c), s	25.0	0.0	0.0	14.9	0.0	0.0	50.0	12.4	12.4	13.3	11.8	11.8
Prop In Lane	0.27		0.32	0.19		0.06	1.00		0.08	1.00		0.06
Lane Grp Cap(c), veh/h	477	0	0	495	0	0	358	1058	1094	345	1058	1101
V/C Ratio(X)	0.93	0.00	0.00	0.64	0.00	0.00	1.10	0.45	0.45	0.03	0.43	0.43
Avail Cap(c_a), veh/h	477	0	0	495	0	0	358	1058	1094	345	1058	1101
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.2	0.0	0.0	25.5	0.0	0.0	27.5	9.4	9.4	13.1	9.3	9.3
Incr Delay (d2), s/veh	25.4	0.0	0.0	2.2	0.0	0.0	77.7	0.4	0.4	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.1	0.0	0.0	9.6	0.0	0.0	23.0	7.8	8.0	0.2	7.5	7.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.6	0.0	0.0	27.7	0.0	0.0	105.2	9.8	9.8	13.1	9.7	9.7
LnGrp LOS	E	A	A	C	A	A	F	A	A	B	A	A
Approach Vol, veh/h		446			318			1362			946	
Approach Delay, s/veh		55.6			27.7			37.4			9.7	
Approach LOS		E			C			D			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		55.0		29.0		55.0		29.0				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		50.0		25.0		50.0		25.0				
Max Q Clear Time (g_c+I1), s		52.0		27.0		15.3		16.9				
Green Ext Time (p_c), s		0.0		0.0		10.7		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				30.5								
HCM 6th LOS				C								

Intersection

Intersection Delay, s/veh 21.5

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	400	5	5	575	10	5	15	5	5	15	10
Future Vol, veh/h	5	400	5	5	575	10	5	15	5	5	15	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	444	6	6	639	11	6	17	6	6	17	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	15.2	27	9.8	9.7
HCM LOS	C	D	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	1%	1%	17%
Vol Thru, %	60%	98%	97%	50%
Vol Right, %	20%	1%	2%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	410	590	30
LT Vol	5	5	5	5
Through Vol	15	400	575	15
RT Vol	5	5	10	10
Lane Flow Rate	28	456	656	33
Geometry Grp	1	1	1	1
Degree of Util (X)	0.05	0.609	0.84	0.059
Departure Headway (Hd)	6.453	4.815	4.615	6.347
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	558	743	780	568
Service Time	4.455	2.883	2.675	4.349
HCM Lane V/C Ratio	0.05	0.614	0.841	0.058
HCM Control Delay	9.8	15.2	27	9.7
HCM Lane LOS	A	C	D	A
HCM 95th-tile Q	0.2	4.2	9.7	0.2

HCM 6th TWSC  
10: W 16th St & Chestnut St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection

Int Delay, s/veh 0.6

Movement EBL EBT WBT WBR SBL SBR

Lane Configurations 

Traffic Vol, veh/h 10 350 545 35 20 5

Future Vol, veh/h 10 350 545 35 20 5

Conflicting Peds, #/hr 3 0 0 4 0 0

Sign Control Free Free Free Free Stop Stop

RT Channelized - None - None - None

Storage Length - - - - 0 -

Veh in Median Storage, # - 0 0 - 0 -

Grade, % - 0 0 - 0 -

Peak Hour Factor 90 90 90 90 90 90

Heavy Vehicles, % 2 2 2 2 2 2

Mvmt Flow 11 389 606 39 22 6

Major/Minor Major1 Major2 Minor2

Conflicting Flow All 649 0 - 0 1041 630

Stage 1 - - - - 630 -

Stage 2 - - - - 411 -

Critical Hdwy 4.12 - - - 6.42 6.22

Critical Hdwy Stg 1 - - - - 5.42 -

Critical Hdwy Stg 2 - - - - 5.42 -

Follow-up Hdwy 2.218 - - - 3.518 3.318

Pot Cap-1 Maneuver 937 - - - 255 482

Stage 1 - - - - 531 -

Stage 2 - - - - 669 -

Platoon blocked, % - - - -

Mov Cap-1 Maneuver 933 - - - 249 480

Mov Cap-2 Maneuver - - - - 249 -

Stage 1 - - - - 521 -

Stage 2 - - - - 666 -

Approach EB WB SB

HCM Control Delay, s 0.2 0 19.5

HCM LOS C

Minor Lane/Major Mvmt EBL EBT WBT WBR SBLn1

Capacity (veh/h) 933 - - - 276

HCM Lane V/C Ratio 0.012 - - - 0.101

HCM Control Delay (s) 8.9 0 - - 19.5

HCM Lane LOS A A - - C

HCM 95th %tile Q(veh) 0 - - - 0.3

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	9.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	15	5	100	5	5	10	45	1215	5	5	945	85
Future Vol, veh/h	15	5	100	5	5	10	45	1215	5	5	945	85
Conflicting Peds, #/hr	1	0	1	1	0	1	8	0	1	8	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	6	111	6	6	11	50	1350	6	6	1050	94





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1896	2581	581	2002	2625	687	1152	0	0	1364	0	0
Stage 1	1117	1117	-	1461	1461	-	-	-	-	-	-	-
Stage 2	779	1464	-	541	1164	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	42	25	457	35	24	389	602	-	-	500	-	-
Stage 1	221	281	-	135	192	-	-	-	-	-	-	-
Stage 2	355	191	-	493	267	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	30	22	453	20	21	386	597	-	-	496	-	-
Mov Cap-2 Maneuver	30	22	-	20	21	-	-	-	-	-	-	-
Stage 1	201	275	-	123	175	-	-	-	-	-	-	-
Stage 2	306	174	-	360	262	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	160.8		182.3		0.4		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	597	-	-	127 39	496	-	-
HCM Lane V/C Ratio	0.084	-	-	1.05 0.57	0.011	-	-
HCM Control Delay (s)	11.6	-	-	160.8 182.3	12.3	-	-
HCM Lane LOS	B	-	-	F F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	7.5 2	0	-	-

HCM 6th TWSC  
12: Broadway St & W 18th St





Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	8.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	100	20	5	110	5	5	15	5	5	15	5
Future Vol, veh/h	15	100	20	5	110	5	5	15	5	5	15	5
Conflicting Peds, #/hr	2	0	1	1	0	2	7	0	3	7	0	3
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	111	22	6	122	6	6	17	6	6	17	6
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	137	81	28	139	81	29	30	0	0	30	0	0
Stage 1	39	39	-	39	39	-	-	-	-	-	-	-
Stage 2	98	42	-	100	42	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	834	809	1047	831	809	1046	1583	-	-	1583	-	-
Stage 1	976	862	-	976	862	-	-	-	-	-	-	-
Stage 2	908	860	-	906	860	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	721	791	1039	715	791	1037	1572	-	-	1572	-	-
Mov Cap-2 Maneuver	721	791	-	715	791	-	-	-	-	-	-	-
Stage 1	965	853	-	965	853	-	-	-	-	-	-	-
Stage 2	769	851	-	767	851	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	10.4		10.4			1.5			1.5			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1572	-	-	811	795	1572	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.185	0.168	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	10.4	10.4	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.7	0.6	0	-	-				















HCM 6th TWSC  
13: Normal Ave & W 18th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	130	20	5	130	5	0	20	5	5	25	5
Future Vol, veh/h	25	130	20	5	130	5	0	20	5	5	25	5
Conflicting Peds, #/hr	1	0	2	2	0	1	4	0	2	4	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	28	144	22	6	144	6	0	22	6	6	28	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	151	0	0	168	0	0	393	376	161	389	384	152
Stage 1	-	-	-	-	-	-	213	213	-	160	160	-
Stage 2	-	-	-	-	-	-	180	163	-	229	224	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1430	-	-	1410	-	-	566	555	884	570	550	894
Stage 1	-	-	-	-	-	-	789	726	-	842	766	-
Stage 2	-	-	-	-	-	-	822	763	-	774	718	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1429	-	-	1407	-	-	526	538	879	535	534	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	538	-	535	534	-
Stage 1	-	-	-	-	-	-	770	709	-	823	761	-
Stage 2	-	-	-	-	-	-	780	758	-	726	701	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.1			0.3			11.5			11.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	583	1429	-	-	1407	-	-	567				
HCM Lane V/C Ratio	0.048	0.019	-	-	0.004	-	-	0.069				
HCM Control Delay (s)	11.5	7.6	0	-	7.6	0	-	11.8				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.2				

# HCM 6th Signalized Intersection Summary 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	215	460	785	150	465	605
Future Volume (veh/h)	215	460	785	150	465	605
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	239	227	872	167	517	672
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	444	696	1287	560	553	2618
Arrive On Green	0.13	0.13	0.36	0.36	0.31	0.74
Sat Flow, veh/h	3456	1585	3647	1545	1781	3647
Grp Volume(v), veh/h	239	227	872	167	517	672
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1545	1781	1777
Q Serve(g_s), s	5.0	7.3	16.2	6.0	22.0	4.8
Cycle Q Clear(g_c), s	5.0	7.3	16.2	6.0	22.0	4.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	444	696	1287	560	553	2618
V/C Ratio(X)	0.54	0.33	0.68	0.30	0.93	0.26
Avail Cap(c_a), veh/h	887	899	2052	892	571	2618
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	14.3	21.0	17.8	26.1	3.3
Incr Delay (d2), s/veh	0.4	0.1	0.9	0.4	22.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.7	4.4	10.3	3.8	17.5	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	32.2	14.4	21.9	18.2	48.6	3.4
LnGrp LOS	C	B	C	B	D	A
Approach Vol, veh/h	466		1039			1189
Approach Delay, s/veh	23.5		21.3			23.0
Approach LOS	C		C			C
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	62.9		29.2		33.7	15.0
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 35		25.0		45.0	20.0
Max Q Clear Time (g_c+I1), s	6.8		24.0		18.2	9.3
Green Ext Time (p_c), s	4.6		0.2		10.0	0.7
Intersection Summary						
HCM 6th Ctrl Delay			22.5			
HCM 6th LOS			C			
Notes						
User approved pedestrian interval to be less than phase max green.						
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.						

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	100	0	935	675	145
Future Vol, veh/h	0	100	0	935	675	145
Conflicting Peds, #/hr	1	1	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	111	0	1039	750	161
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	457	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	551	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	550	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	13.2	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	550	-	-		
HCM Lane V/C Ratio	-	0.202	-	-		
HCM Control Delay (s)	-	13.2	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	0.7	-	-		

HCM 6th TWSC  
15: Normal Ave & W 20th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	8.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	105	0	5	125	5	0	15	5	15	15	10
Future Vol, veh/h	5	105	0	5	125	5	0	15	5	15	15	10
Conflicting Peds, #/hr	1	0	1	3	0	3	0	0	0	2	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	117	0	6	139	6	0	17	6	17	17	11

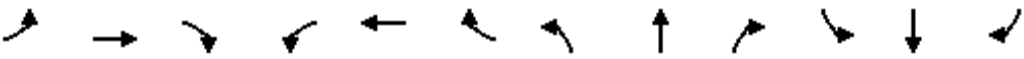
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	153	82	26	140	84	25	28	0	0	25	0	0
Stage 1	57	57	-	22	22	-	-	-	-	-	-	-
Stage 2	96	25	-	118	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	814	808	1050	830	806	1051	1585	-	-	1589	-	-
Stage 1	955	847	-	996	877	-	-	-	-	-	-	-
Stage 2	911	874	-	887	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	694	797	1047	727	796	1046	1585	-	-	1586	-	-
Mov Cap-2 Maneuver	694	797	-	727	796	-	-	-	-	-	-	-
Stage 1	955	838	-	994	875	-	-	-	-	-	-	-
Stage 2	760	872	-	753	834	-	-	-	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	10.4			10.5			0			2.7		
HCM LOS	B			B								

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1585	-	-	792 800	1586	-	-
HCM Lane V/C Ratio	-	-	-	0.154 0.187	0.011	-	-
HCM Control Delay (s)	0	-	-	10.4 10.5	7.3	0	-
HCM Lane LOS	A	-	-	B B	A A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5 0.7	0	-	-

# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↗	↕		↖	↕	
Traffic Volume (veh/h)	45	5	65	10	5	15	300	850	5	25	740	25
Future Volume (veh/h)	45	5	65	10	5	15	300	850	5	25	740	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	50	6	29	11	6	-4	333	944	5	28	822	26
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	8	40	370	178	0	565	2626	14	520	2545	81
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.00	0.72	0.72	0.72	0.72	0.72	0.72
Sat Flow, veh/h	877	105	509	1301	950	-530	649	3624	19	590	3512	111
Grp Volume(v), veh/h	85	0	0	0	0	0	333	463	486	28	416	432
Grp Sat Flow(s),veh/h/ln	1490	0	0	0	0	0	649	1777	1866	590	1777	1847
Q Serve(g_s), s	2.7	0.0	0.0	0.0	0.0	0.0	18.3	4.7	4.7	0.9	4.1	4.1
Cycle Q Clear(g_c), s	2.7	0.0	0.0	0.0	0.0	0.0	22.4	4.7	4.7	5.6	4.1	4.1
Prop In Lane	0.59		0.34	0.85		-0.31	1.00		0.01	1.00		0.06
Lane Grp Cap(c), veh/h	236	0	0	0	0	0	565	1288	1352	520	1288	1338
V/C Ratio(X)	0.36	0.00	0.00	0.00	0.00	0.00	0.59	0.36	0.36	0.05	0.32	0.32
Avail Cap(c_a), veh/h	597	0	0	0	0	0	565	1288	1352	520	1288	1338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	0.0	0.0	0.0	0.0	0.0	6.4	2.5	2.5	3.5	2.4	2.4
Incr Delay (d2), s/veh	0.9	0.0	0.0	0.0	0.0	0.0	4.5	0.8	0.7	0.2	0.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	0.0	0.0	0.0	0.0	0.0	3.1	0.9	0.9	0.1	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.7	0.0	0.0	0.0	0.0	0.0	10.9	3.3	3.2	3.7	3.1	3.0
LnGrp LOS	C	A	A	A	A	A	B	A	A	A	A	A
Approach Vol, veh/h		85			0			1282			876	
Approach Delay, s/veh		22.7			0.0			5.2			3.1	
Approach LOS		C						A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		8.3		40.0		8.3				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		35.0		15.5		35.0		15.5				
Max Q Clear Time (g_c+I1), s		24.4		4.7		7.6		0.0				
Green Ext Time (p_c), s		7.3		0.3		8.4		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			5.0									
HCM 6th LOS			A									

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

Intersection

Int Delay, s/veh 8.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	290	0	10	80	10	5
Future Vol, veh/h	290	0	10	80	10	5
Conflicting Peds, #/hr	0	4	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	322	0	11	89	11	6





















Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	84	60	0
Stage 1	56	-	-
Stage 2	28	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	918	1005	-
Stage 1	967	-	-
Stage 2	995	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	912	1001	-
Mov Cap-2 Maneuver	912	-	-
Stage 1	967	-	-
Stage 2	988	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	912	1493
HCM Lane V/C Ratio	-	-	0.353	0.007
HCM Control Delay (s)	-	-	11.1	7.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.6	0

# HCM 6th Signalized Intersection Summary 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	430	10	700	0	285	565	625	225	0
Future Volume (veh/h)	0	0	0	430	10	700	0	285	565	625	225	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	0	0	0	486	0	0	0	317	0	472	561	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	0	3	0	716	0		0	400		623	654	0
Arrive On Green	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.22	0.00	0.35	0.35	0.00
Sat Flow, veh/h	0	1856	0	3526	0	1572	0	1856	1572	1767	1856	0
Grp Volume(v), veh/h	0	0	0	486	0	0	0	317	0	472	561	0
Grp Sat Flow(s),veh/h/ln	0	1856	0	1763	0	1572	0	1856	1572	1767	1856	0
Q Serve(g_s), s	0.0	0.0	0.0	8.1	0.0	0.0	0.0	10.3	0.0	15.1	17.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	8.1	0.0	0.0	0.0	10.3	0.0	15.1	17.9	0.0
Prop In Lane	0.00		0.00	1.00		1.00	0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	0	3	0	716	0		0	400		623	654	0
V/C Ratio(X)	0.00	0.00	0.00	0.68	0.00		0.00	0.79		0.76	0.86	0.00
Avail Cap(c_a), veh/h	0	553	0	1934	0		0	1018		969	1018	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	23.5	0.0	0.0	0.0	23.7	0.0	18.2	19.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	1.6	0.0	0.0	0.0	2.7	0.0	0.7	2.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	0.0	0.0	5.8	0.0	0.0	0.0	7.9	0.0	9.2	11.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	25.1	0.0	0.0	0.0	26.4	0.0	19.0	21.9	0.0
LnGrp LOS	A	A	A	C	A		A	C		B	C	A
Approach Vol, veh/h	0				486			317			1033	
Approach Delay, s/veh	0.0				25.1			26.4			20.6	
Approach LOS					C			C				
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.7			17.6			27.5			0.0		
Change Period (Y+Rc), s	5.0			4.6			5.0			4.6		
Max Green Setting (Gmax), s	35.0			35.0			35.0			19.0		
Max Q Clear Time (g_c+I1), s	12.3			10.1			19.9			0.0		
Green Ext Time (p_c), s	1.4			2.8			2.6			0.0		
Intersection Summary												
HCM 6th Ctrl Delay	22.8											
HCM 6th LOS	C											
Notes												
User approved volume balancing among the lanes for turning movement.												
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.												

# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	1115	70	160	720	0	0	0	0	820	0	540
Future Volume (veh/h)	0	1115	70	160	720	0	0	0	0	820	0	540
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1174	27	168	758	0				863	0	568
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1322	590	393	1989	0				987	0	878
Arrive On Green	0.00	0.37	0.37	0.11	0.56	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	3170
Grp Volume(v), veh/h	0	1174	27	168	758	0				863	0	568
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	20.9	0.7	3.1	8.0	0.0				15.6	0.0	10.6
Cycle Q Clear(g_c), s	0.0	20.9	0.7	3.1	8.0	0.0				15.6	0.0	10.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1322	590	393	1989	0				987	0	878
V/C Ratio(X)	0.00	0.89	0.05	0.43	0.38	0.00				0.87	0.00	0.65
Avail Cap(c_a), veh/h	0	1529	682	1026	2848	0				1322	0	1176
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	19.8	13.5	27.8	8.3	0.0				23.2	0.0	21.5
Incr Delay (d2), s/veh	0.0	5.6	0.0	0.3	0.0	0.0				4.3	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.0	13.7	0.4	2.2	4.7	0.0				10.9	0.0	6.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	25.4	13.5	28.1	8.3	0.0				27.5	0.0	21.8
LnGrp LOS	A	C	B	C	A	A				C	A	C
Approach Vol, veh/h		1201			926						1431	
Approach Delay, s/veh		25.1			11.9						25.2	
Approach LOS		C			B						C	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.7	31.1		23.7		43.7						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	15.1	22.9		17.6		10.0						
Green Ext Time (p_c), s	0.1	2.2		1.1		2.2						

## Intersection Summary

HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Existing Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↑↑			↑↑	↔	↔	↔	↔			
Traffic Volume (veh/h)	470	1465	0	0	750	780	130	0	200	0	0	0
Future Volume (veh/h)	470	1465	0	0	750	780	130	0	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	495	1542	0	0	789	383	137	0	128			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	668	2166	0	0	1110	488	576	0	256			
Arrive On Green	0.19	0.61	0.00	0.00	0.31	0.31	0.16	0.00	0.16			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	3563	0	1585			
Grp Volume(v), veh/h	495	1542	0	0	789	383	137	0	128			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	0	1585			
Q Serve(g_s), s	6.5	14.4	0.0	0.0	9.4	10.7	1.6	0.0	3.5			
Cycle Q Clear(g_c), s	6.5	14.4	0.0	0.0	9.4	10.7	1.6	0.0	3.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	668	2166	0	0	1110	488	576	0	256			
V/C Ratio(X)	0.74	0.71	0.00	0.00	0.71	0.79	0.24	0.00	0.50			
Avail Cap(c_a), veh/h	1438	3992	0	0	2144	942	1853	0	824			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	18.3	6.5	0.0	0.0	14.6	15.1	17.6	0.0	18.4			
Incr Delay (d2), s/veh	0.6	0.2	0.0	0.0	0.3	1.1	0.1	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(95%),veh/ln	4.2	5.8	0.0	0.0	5.8	6.0	1.1	0.0	2.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	6.6	0.0	0.0	14.9	16.1	17.7	0.0	18.9			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h												
		2037			1172			265				
Approach Delay, s/veh												
		9.6			15.3			18.3				
Approach LOS												
		A			B			B				
Timer - Assigned Phs												
		2			5		6		8			
Phs Duration (G+Y+Rc), s												
		35.3			14.3		21.0		12.8			
Change Period (Y+Rc), s												
		* 6			5.0		* 6		5.0			
Max Green Setting (Gmax), s												
		* 54			20.0		* 29		25.0			
Max Q Clear Time (g_c+I1), s												
		16.4			8.5		12.7		5.5			
Green Ext Time (p_c), s												
		5.7			0.8		2.3		0.4			
Intersection Summary												
HCM 6th Ctrl Delay												
			12.2									
HCM 6th LOS												
			B									

# Appendix C – MUTCD Signal Warrants

## Warrant 3, Peak Hour



Major Street	Park Ave
Minor Street	18th St

Project	Chico Barber Yard Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	AM

### Turn Movement Volumes

	NB	SB	EB	WB
Left	40	5	20	5
Through	580	710	5	5
Right	5	25	135	5
Total	625	740	160	15

### Major Street Direction

x	North/South
	East/West

### Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

### Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	35
Approach with Worst Case Delay	WB
Total Vehicles on Approach	15

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Existing Plus Project Conditions	0.1	160	1,540
Limiting Value	4	100	800
Condition Satisfied?	Not Met	Met	Met
Warrant Met	<u>NO</u>		



Major Street **Park Ave**  
 Minor Street **18th St**

Project **Chico Barber Yard Specific Plan**  
 Scenario **Existing Plus Project Conditions**  
 Peak Hour **AM**

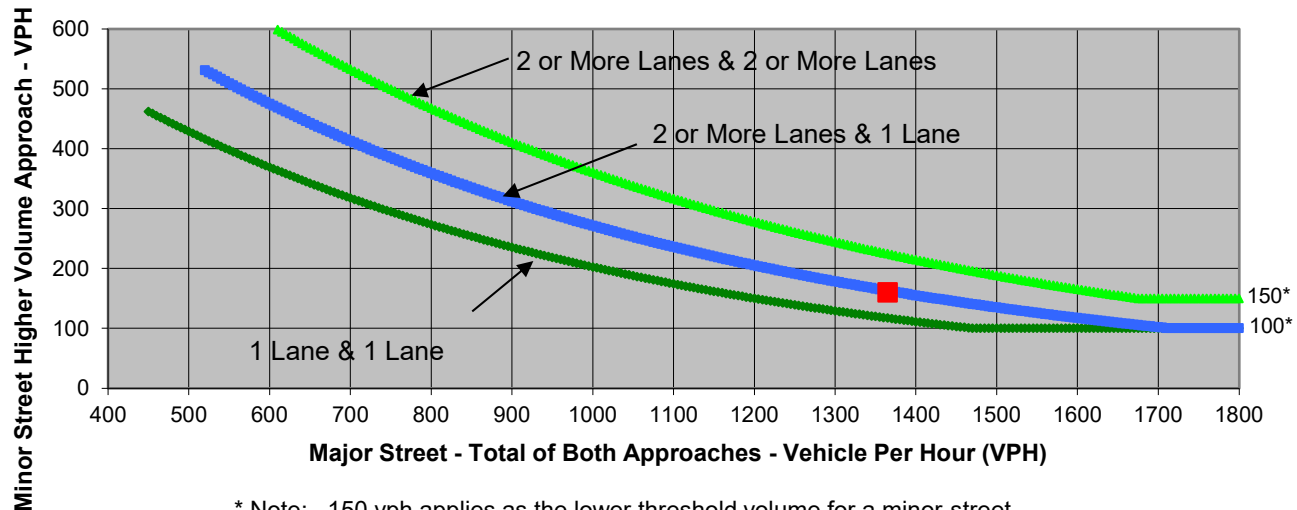
Turn Movement Volumes

	NB	SB	EB	WB
Left	40	5	20	5
Through	580	710	5	5
Right	5	25	135	5
Total	625	740	160	15

Major Street Direction

x	North/South
	East/West

**Warrant 3B, Peak Hour**



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Park Ave	18th St	
Number of Approach Lanes	<b>2</b>	<b>1</b>	<b><u>NO</u></b>
Traffic Volume (VPH) *	<b>1,365</b>	<b>160</b>	

\* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.  
 Traffic Volume for Minor Street is the Volume of High Volume Approach.



Major Street	Park Ave
Minor Street	18th St

Project	Chico Barber Yard Specific Plan
Scenario	Existing Plus Project Conditions
Peak Hour	PM

#### Turn Movement Volumes

	NB	SB	EB	WB
Left	45	5	15	5
Through	1,215	945	5	5
Right	5	85	100	10
Total	1,265	1,035	120	20

#### Major Street Direction

x	North/South
	East/West

#### Intersection Geometry

Number of Approach Lanes for Minor Street	1
Total Approaches	4

#### Worst Case Delay for Minor Street

Stopped Delay (seconds per vehicle)	306
Approach with Worst Case Delay	EB
Total Vehicles on Approach	120

Warrant 3A, Peak Hour			
	Peak Hour Delay on Minor Approach (vehicle-hours)	Peak Hour Volume on Minor Approach (vph)	Peak Hour Entering Volume Serviced (vph)
Existing Plus Project Conditions	10.2	120	2,440
Limiting Value	4	100	800
Condition Satisfied?	Met	Met	Met
Warrant Met	<u>YES</u>		

Major Street **Park Ave**  
Minor Street **18th St**

Project **Chico Barber Yard Specific Plan**  
Scenario **Existing Plus Project Conditions**  
Peak Hour **PM**

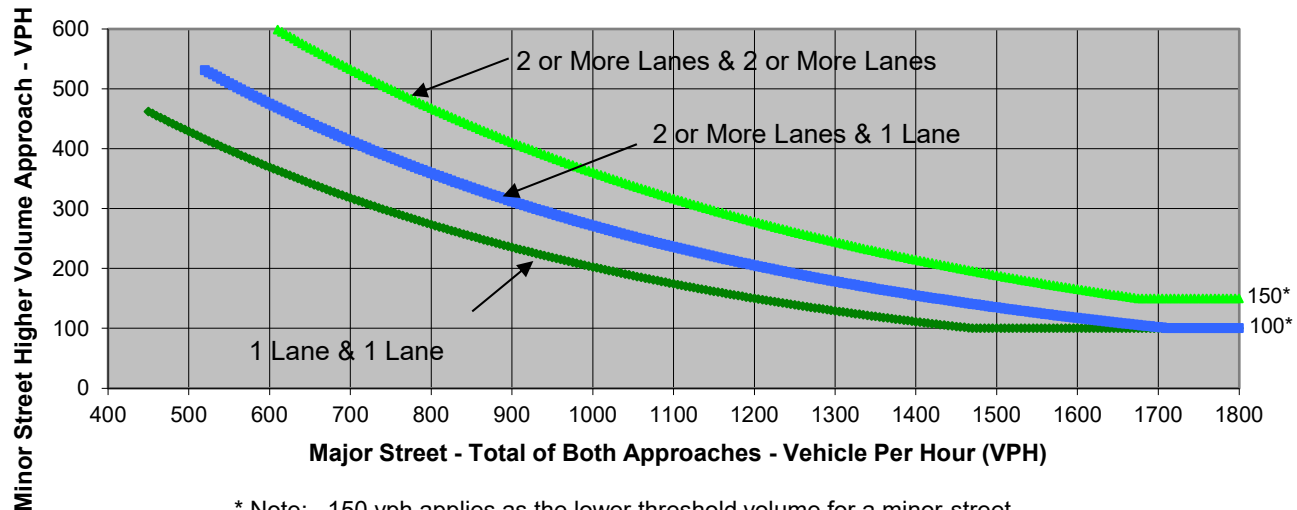
## Turn Movement Volumes

	NB	SB	EB	WB
Left	45	5	15	5
Through	1,215	945	5	5
Right	5	85	100	10
Total	1,265	1,035	120	20

## Major Street Direction

x	North/South
	East/West

## Warrant 3B, Peak Hour



\* Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2014

	Major Street	Minor Street	Warrant Met
	Park Ave	18th St	
Number of Approach Lanes	2	1	<u>YES</u>
Traffic Volume (VPH) *	2,300	120	
* Note: Traffic Volume for Major Street is Total Volume of Both Approches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

#### **Section 4C.09 Warrant 8, Roadway Network**

Support:

<sup>01</sup> Installing a traffic control signal at some intersections might be justified to encourage concentration and organization of traffic flow on a roadway network.

**Standard:**

<sup>02</sup> **The need for a traffic control signal shall be considered if an engineering study finds that the common intersection of two or more major routes meets one or both of the following criteria:**

- A. The intersection has a total existing, or immediately projected, entering volume of at least 1,000 vehicles per hour during the peak hour of a typical weekday and has 5-year projected traffic volumes, based on an engineering study, that meet one or more of Warrants 1, 2, and 3 during an average weekday; or**
- B. The intersection has a total existing or immediately projected entering volume of at least 1,000 vehicles per hour for each of any 5 hours of a non-normal business day (Saturday or Sunday).**

<sup>03</sup> **A major route as used in this signal warrant shall have at least one of the following characteristics:**




- A. It is part of the street or highway system that serves as the principal roadway network for through traffic flow.**
- B. It includes rural or suburban highways outside, entering, or traversing a city.**
- C. It appears as a major route on an official plan, such as a major street plan in an urban area traffic and transportation study.**

Appendix D –  
**Cumulative No Project  
Conditions**  
Peak Hour Traffic Volume  
Forecasts, Lane Configurations,  
and Technical Calculations






HCM 6th TWSC  
1a: Park Ave & W 11th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	40	50	910	560	210
Future Vol, veh/h	40	40	50	910	560	210
Conflicting Peds, #/hr	0	0	10	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	44	44	56	1011	622	233
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1367	438	865	0	-	0
Stage 1	749	-	-	-	-	-
Stage 2	618	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	137	564	767	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	497	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	112	559	760	-	-	-
Mov Cap-2 Maneuver	112	-	-	-	-	-
Stage 1	350	-	-	-	-	-
Stage 2	492	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	40.6	0.5		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	760	-	187	-	-	
HCM Lane V/C Ratio	0.073	-	0.475	-	-	
HCM Control Delay (s)	10.1	-	40.6	-	-	
HCM Lane LOS	B	-	E	-	-	
HCM 95th %tile Q(veh)	0.2	-	2.3	-	-	

HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour












Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	930	10	20	580
Future Vol, veh/h	10	30	930	10	20	580
Conflicting Peds, #/hr	0	0	0	10	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	33	1033	11	22	644
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1415	532	0	0	1054	0
Stage 1	1049	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	127	489	-	-	650	-
Stage 1	296	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	119	484	-	-	644	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	293	-	-	-	-	-
Stage 2	634	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	15.8	0		0.4		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	377	644	-	
HCM Lane V/C Ratio	-	-	0.118	0.035	-	
HCM Control Delay (s)	-	-	15.8	10.8	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	

# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Cumulative No Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↕			↗	
Traffic Volume (veh/h)	0	0	0	50	570	180	20	60	0	0	90	5
Future Volume (veh/h)	0	0	0	50	570	180	20	60	0	0	90	5
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.99		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No			No		
Adj Sat Flow, veh/h/ln				1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h				56	633	160	22	67	0	0	100	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				83	977	262	268	298	0	0	381	0
Arrive On Green				0.37	0.37	0.37	0.21	0.21	0.00	0.00	0.21	0.00
Sat Flow, veh/h				225	2636	706	276	1452	0	0	1856	0
Grp Volume(v), veh/h				459	0	390	89	0	0	0	100	0
Grp Sat Flow(s),veh/h/ln				1844	0	1723	1729	0	0	0	1856	0
Q Serve(g_s), s				4.4	0.0	3.9	0.0	0.0	0.0	0.0	1.0	0.0
Cycle Q Clear(g_c), s				4.4	0.0	3.9	0.8	0.0	0.0	0.0	1.0	0.0
Prop In Lane				0.12		0.41	0.25		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				684	0	639	566	0	0	0	381	0
V/C Ratio(X)				0.67	0.00	0.61	0.16	0.00	0.00	0.00	0.26	0.00
Avail Cap(c_a), veh/h				2172	0	2029	1402	0	0	0	1311	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				5.6	0.0	5.4	7.0	0.0	0.0	0.0	7.1	0.0
Incr Delay (d2), s/veh				0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.6	0.0	0.5	0.2	0.0	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				6.0	0.0	5.8	7.1	0.0	0.0	0.0	7.2	0.0
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					849			89			100	
Approach Delay, s/veh					5.9			7.1			7.2	
Approach LOS					A			A			A	
Timer - Assigned Phs	2			4				8				
Phs Duration (G+Y+Rc), s	12.9			8.4				8.4				
Change Period (Y+Rc), s	* 5			* 4				* 4				
Max Green Setting (Gmax), s	* 25			* 15				* 15				
Max Q Clear Time (g_c+I1), s	6.4			3.0				2.8				
Green Ext Time (p_c), s	1.3			0.1				0.1				
Intersection Summary												
HCM 6th Ctrl Delay				6.1								
HCM 6th LOS				A								
Notes												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Cumulative No Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	20	730	20	0	0	0	0	60	50	80	60	0
Future Volume (veh/h)	20	730	20	0	0	0	0	60	50	80	60	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.97	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h	22	811	18				0	67	4	89	67	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	33	1284	30				0	382	23	422	180	0
Arrive On Green	0.36	0.36	0.36				0.00	0.22	0.22	0.22	0.22	0.00
Sat Flow, veh/h	91	3517	82				0	1730	103	731	814	0
Grp Volume(v), veh/h	447	0	404				0	0	71	156	0	0
Grp Sat Flow(s),veh/h/ln	1851	0	1839				0	0	1834	1545	0	0
Q Serve(g_s), s	4.4	0.0	3.9				0.0	0.0	0.7	1.1	0.0	0.0
Cycle Q Clear(g_c), s	4.4	0.0	3.9				0.0	0.0	0.7	1.8	0.0	0.0
Prop In Lane	0.05		0.04				0.00		0.06	0.57		0.00
Lane Grp Cap(c), veh/h	676	0	671				0	0	405	601	0	0
V/C Ratio(X)	0.66	0.00	0.60				0.00	0.00	0.18	0.26	0.00	0.00
Avail Cap(c_a), veh/h	2130	0	2117				0	0	1266	1304	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.8	0.0	5.6				0.0	0.0	6.9	7.3	0.0	0.0
Incr Delay (d2), s/veh	0.4	0.0	0.3				0.0	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.5				0.0	0.0	0.1	0.3	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	6.2	0.0	5.9				0.0	0.0	6.9	7.3	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h		851						71			156	
Approach Delay, s/veh		6.1						6.9			7.3	
Approach LOS		A						A			A	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		12.9		8.8				8.8				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		6.4		3.8				2.7				
Green Ext Time (p_c), s		1.2		0.2				0.1				

### Intersection Summary

HCM 6th Ctrl Delay	6.3
HCM 6th LOS	A

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St



















Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	3.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	0	5	5	10	0	50	5	5	30	30
Future Vol, veh/h	40	5	0	5	5	10	0	50	5	5	30	30
Conflicting Peds, #/hr	10	0	5	5	0	10	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	44	6	0	6	6	11	0	56	6	6	33	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	140	129	55	134	142	74	66	0	0	67	0	0
Stage 1	62	62	-	64	64	-	-	-	-	-	-	-
Stage 2	78	67	-	70	78	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	828	760	1009	835	747	985	1529	-	-	1528	-	-
Stage 1	947	841	-	944	840	-	-	-	-	-	-	-
Stage 2	928	837	-	937	828	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	804	753	1004	820	740	971	1529	-	-	1521	-	-
Mov Cap-2 Maneuver	804	753	-	820	740	-	-	-	-	-	-	-
Stage 1	947	838	-	939	836	-	-	-	-	-	-	-
Stage 2	903	833	-	923	825	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	9.8		9.3		0		0.6					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1529	-	-	798	864	1521	-	-				
HCM Lane V/C Ratio	-	-	-	0.063	0.026	0.004	-	-				
HCM Control Delay (s)	0	-	-	9.8	9.3	7.4	0	-				
HCM Lane LOS	A	-	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

# HCM 6th Signalized Intersection Summary




## 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	10	10	10	10	10	5	790	10	10	530	5
Future Volume (veh/h)	10	10	10	10	10	10	5	790	10	10	530	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.98		1.00	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	11	0	11	11	0	6	878	11	11	589	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	287	61	0	287	61	0	674	1953	24	549	1959	20
Arrive On Green	0.08	0.08	0.00	0.08	0.08	0.00	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	804	804	0	804	804	0	815	3564	45	620	3575	36
Grp Volume(v), veh/h	22	0	0	22	0	0	6	434	455	11	290	305
Grp Sat Flow(s),veh/h/ln	1607	0	0	1607	0	0	815	1763	1846	620	1763	1849
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	3.5	0.3	2.1	2.1
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.3	0.0	0.0	2.2	3.5	3.5	3.8	2.1	2.1
Prop In Lane	0.50		0.00	0.50		0.00	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	348	0	0	348	0	0	674	966	1012	549	966	1013
V/C Ratio(X)	0.06	0.00	0.00	0.06	0.00	0.00	0.01	0.45	0.45	0.02	0.30	0.30
Avail Cap(c_a), veh/h	1411	0	0	1411	0	0	1010	1693	1773	804	1693	1775
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.3	0.0	0.0	10.3	0.0	0.0	3.5	3.2	3.2	4.4	2.9	2.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4	0.0	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.4	0.0	0.0	10.4	0.0	0.0	3.5	3.7	3.7	4.4	3.2	3.2
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		22			22			895			606	
Approach Delay, s/veh		10.4			10.4			3.7			3.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.1		5.8		18.1		5.8				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		5.5		2.3		5.8		2.3				
Green Ext Time (p_c), s		7.4		0.0		4.8		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			3.7									
HCM 6th LOS			A									




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	3.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	30	5	20	20
Future Vol, veh/h	5	20	30	5	20	20
Conflicting Peds, #/hr	0	5	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	22	33	6	22	22
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	107	46	0	0	44	0
Stage 1	41	-	-	-	-	-
Stage 2	66	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	888	1021	-	-	1558	-
Stage 1	979	-	-	-	-	-
Stage 2	954	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	871	1011	-	-	1551	-
Mov Cap-2 Maneuver	871	-	-	-	-	-
Stage 1	974	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.8	0		3.7		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 980		1551	-	
HCM Lane V/C Ratio	-	- 0.028		0.014	-	
HCM Control Delay (s)	-	- 8.8		7.4	0	
HCM Lane LOS	-	- A		A	A	
HCM 95th %tile Q(veh)	-	- 0.1		0	-	

HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	3.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	20	20	30	20	10
Future Vol, veh/h	5	20	20	30	20	10
Conflicting Peds, #/hr	0	5	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	22	22	33	22	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	110	38	38	0	-	0
Stage 1	33	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	885	1031	1566	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	864	1021	1559	-	-	-
Mov Cap-2 Maneuver	864	-	-	-	-	-
Stage 1	968	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.8	2.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1559	-	985	-	-	
HCM Lane V/C Ratio	0.014	-	0.028	-	-	
HCM Control Delay (s)	7.3	-	8.8	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	



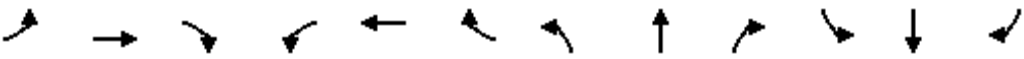
HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	5	5	5	5	5	5	30	5	5	40	0
Future Vol, veh/h	0	5	5	5	5	5	5	30	5	5	40	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	6	6	6	6	6	6	33	6	6	44	0
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	12	0	0	12	0	0	52	33	9	50	33	9
Stage 1	-	-	-	-	-	-	9	9	-	21	21	-
Stage 2	-	-	-	-	-	-	43	24	-	29	12	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1600	-	-	1600	-	-	944	858	1070	947	858	1070
Stage 1	-	-	-	-	-	-	1010	886	-	995	876	-
Stage 2	-	-	-	-	-	-	969	873	-	985	884	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1600	-	-	1600	-	-	903	855	1070	911	855	1070
Mov Cap-2 Maneuver	-	-	-	-	-	-	903	855	-	911	855	-
Stage 1	-	-	-	-	-	-	1010	886	-	995	872	-
Stage 2	-	-	-	-	-	-	916	870	-	943	884	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			2.4			9.3			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	883	1600	-	-	1600	-	-	861				
HCM Lane V/C Ratio	0.05	-	-	-	0.003	-	-	0.058				
HCM Control Delay (s)	9.3	0	-	-	7.3	0	-	9.4				
HCM Lane LOS	A	A	-	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2				

# HCM 6th Signalized Intersection Summary 8: Park Ave & W 16th St/E 16th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔		↔	↔	
Traffic Volume (veh/h)	20	30	30	20	30	30	30	750	5	20	520	10
Future Volume (veh/h)	20	30	30	20	30	30	30	750	5	20	520	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	22	33	3	22	33	3	33	833	5	22	578	11
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	261	139	11	261	139	11	627	1859	11	523	1831	35
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	512	1061	86	512	1061	86	817	3592	22	649	3538	67
Grp Volume(v), veh/h	58	0	0	58	0	0	33	409	429	22	288	301
Grp Sat Flow(s),veh/h/ln	1658	0	0	1658	0	0	817	1763	1851	649	1763	1843
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.7	3.7	0.6	2.4	2.4
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.7	0.0	0.0	3.0	3.7	3.7	4.3	2.4	2.4
Prop In Lane	0.38		0.05	0.38		0.05	1.00		0.01	1.00		0.04
Lane Grp Cap(c), veh/h	411	0	0	411	0	0	627	912	958	523	912	954
V/C Ratio(X)	0.14	0.00	0.00	0.14	0.00	0.00	0.05	0.45	0.45	0.04	0.32	0.32
Avail Cap(c_a), veh/h	1332	0	0	1332	0	0	939	1584	1663	770	1584	1656
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.0	0.0	0.0	10.0	0.0	0.0	4.4	3.9	3.9	5.2	3.6	3.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.5	0.5	0.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.4	0.4	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.0	0.0	0.0	10.0	0.0	0.0	4.5	4.4	4.3	5.3	3.8	3.8
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		58			58			871			611	
Approach Delay, s/veh		10.0			10.0			4.4			3.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.2		7.3		18.2		7.3				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		5.7		2.7		6.3		2.7				
Green Ext Time (p_c), s		7.1		0.1		4.8		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			4.6									
HCM 6th LOS			A									





HCM 6th AWSC  
9: Broadway St & W 16th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection

Intersection Delay, s/veh 7.3

Intersection LOS A




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	50	5	5	30	10	5	10	10	10	5	5
Future Vol, veh/h	5	50	5	5	30	10	5	10	10	10	5	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	56	6	6	33	11	6	11	11	11	6	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.2	7.2	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	20%	8%	11%	50%
Vol Thru, %	40%	83%	67%	25%
Vol Right, %	40%	8%	22%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	25	60	45	20
LT Vol	5	5	5	10
Through Vol	10	50	30	5
RT Vol	10	5	10	5
Lane Flow Rate	28	67	50	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.031	0.075	0.055	0.025
Departure Headway (Hd)	3.968	4.043	3.978	4.123
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	895	885	898	861
Service Time	2.025	2.074	2.013	2.181
HCM Lane V/C Ratio	0.031	0.076	0.056	0.026
HCM Control Delay	7.2	7.4	7.2	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.2	0.2	0.1

Intersection

Int Delay, s/veh 3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	5	30	20	0
Future Vol, veh/h	0	0	5	30	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	6	33	22	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	39	0	0 23 23
Stage 1	-	-	- 23 -
Stage 2	-	-	- 0 -
Critical Hdwy	4.13	-	- 6.43 6.23
Critical Hdwy Stg 1	-	-	- 5.43 -
Critical Hdwy Stg 2	-	-	- 5.43 -
Follow-up Hdwy	2.227	-	- 3.527 3.327
Pot Cap-1 Maneuver	1565	-	- 991 1051
Stage 1	-	-	- 997 -
Stage 2	-	-	- - -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1565	-	- 991 1051
Mov Cap-2 Maneuver	-	-	- 991 -
Stage 1	-	-	- 997 -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	8.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1565	-	-	-	991
HCM Lane V/C Ratio	-	-	-	-	0.022
HCM Control Delay (s)	0	-	-	-	8.7
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕↗		↙	↕↗	
Traffic Vol, veh/h	5	10	5	5	5	5	20	780	5	5	540	5
Future Vol, veh/h	5	10	5	5	5	5	20	780	5	5	540	5
Conflicting Peds, #/hr	5	0	5	5	0	5	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	11	6	6	6	6	22	867	6	6	600	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1111	1552	318	1247	1552	452	616	0	0	883	0	0
Stage 1	625	625	-	924	924	-	-	-	-	-	-	-
Stage 2	486	927	-	323	628	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	162	111	675	129	111	552	953	-	-	756	-	-
Stage 1	437	473	-	288	344	-	-	-	-	-	-	-
Stage 2	529	343	-	660	472	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	148	105	665	113	105	544	944	-	-	749	-	-
Mov Cap-2 Maneuver	148	105	-	113	105	-	-	-	-	-	-	-
Stage 1	423	464	-	278	333	-	-	-	-	-	-	-
Stage 2	500	332	-	631	464	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	34		32.4		0.2		0.1					
HCM LOS	D		D									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	944	-	-	146	148	749	-	-				
HCM Lane V/C Ratio	0.024	-	-	0.152	0.113	0.007	-	-				
HCM Control Delay (s)	8.9	-	-	34	32.4	9.8	-	-				
HCM Lane LOS	A	-	-	D	D	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.5	0.4	0	-	-				





HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	10	5	5	20	5	5	10	5	5	5	5
Future Vol, veh/h	5	10	5	5	20	5	5	10	5	5	5	5
Conflicting Peds, #/hr	5	0	0	0	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	11	6	6	22	6	6	11	6	6	6	6
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	71	60	14	61	60	24	17	0	0	22	0	0
Stage 1	26	26	-	31	31	-	-	-	-	-	-	-
Stage 2	45	34	-	30	29	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	918	829	1063	932	829	1050	1594	-	-	1587	-	-
Stage 1	989	872	-	983	867	-	-	-	-	-	-	-
Stage 2	966	865	-	984	869	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	880	814	1058	908	814	1040	1586	-	-	1579	-	-
Mov Cap-2 Maneuver	880	814	-	908	814	-	-	-	-	-	-	-
Stage 1	980	864	-	974	859	-	-	-	-	-	-	-
Stage 2	928	857	-	962	861	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	9.2		9.4			1.8			2.4			
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1586	-	-	881	860	1579	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.025	0.039	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	9.2	9.4	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-				


HCM 6th TWSC  
13: Normal Ave & W 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	6.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	5	0	5	20	5	0	20	5	5	20	5
Future Vol, veh/h	10	5	0	5	20	5	0	20	5	5	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	11	6	0	6	22	6	0	22	6	6	22	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	28	0	0	6	0	0	79	68	6	79	65	25
Stage 1	-	-	-	-	-	-	28	28	-	37	37	-
Stage 2	-	-	-	-	-	-	51	40	-	42	28	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1579	-	-	1608	-	-	907	821	1074	907	824	1048
Stage 1	-	-	-	-	-	-	987	870	-	976	862	-
Stage 2	-	-	-	-	-	-	959	860	-	970	870	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1579	-	-	1608	-	-	876	812	1074	876	815	1048
Mov Cap-2 Maneuver	-	-	-	-	-	-	876	812	-	876	815	-
Stage 1	-	-	-	-	-	-	980	864	-	969	859	-
Stage 2	-	-	-	-	-	-	926	857	-	934	864	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	4.9			1.2			9.4			9.4		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	854	1579	-	-	1608	-	-	857				
HCM Lane V/C Ratio	0.033	0.007	-	-	0.003	-	-	0.039				
HCM Control Delay (s)	9.4	7.3	0	-	7.2	0	-	9.4				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

# HCM 6th Signalized Intersection Summary 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰↰	↰	↕↕	↰	↰	↕↕
Traffic Volume (veh/h)	120	290	510	70	200	360
Future Volume (veh/h)	120	290	510	70	200	360
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	133	120	567	24	222	400
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	533	507	1111	479	295	2112
Arrive On Green	0.16	0.16	0.32	0.32	0.17	0.60
Sat Flow, veh/h	3428	1572	3618	1520	1767	3618
Grp Volume(v), veh/h	133	120	567	24	222	400
Grp Sat Flow(s),veh/h/ln	1714	1572	1763	1520	1767	1763
Q Serve(g_s), s	1.5	2.4	5.6	0.5	5.1	2.2
Cycle Q Clear(g_c), s	1.5	2.4	5.6	0.5	5.1	2.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	533	507	1111	479	295	2112
V/C Ratio(X)	0.25	0.24	0.51	0.05	0.75	0.19
Avail Cap(c_a), veh/h	2083	1219	2678	1154	1074	5274
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	10.6	12.0	10.2	17.0	3.9
Incr Delay (d2), s/veh	0.1	0.1	0.5	0.1	3.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.7	1.7	0.1	2.1	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	16.0	10.7	12.5	10.3	20.8	3.9
LnGrp LOS	B	B	B	B	C	A
Approach Vol, veh/h	253		591			622
Approach Delay, s/veh	13.5		12.4			10.0
Approach LOS	B		B			A
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	31.1		12.2		19.0	11.7
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 64		26.0		32.5	26.0
Max Q Clear Time (g_c+I1), s	4.2		7.1		7.6	4.4
Green Ext Time (p_c), s	3.0		0.6		5.4	0.4

## Intersection Summary

HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

## Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.






Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	20	0	580	460	20
Future Vol, veh/h	0	20	0	580	460	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	22	0	644	511	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	267	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	728	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	728	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.1	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 728		-	-		
HCM Lane V/C Ratio	- 0.031		-	-		
HCM Control Delay (s)	- 10.1		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.1		-	-		

HCM 6th TWSC  
15: Normal Ave & W 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection

Int Delay, s/veh 3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	10	5	5	10
Future Vol, veh/h	5	5	10	5	5	10
Conflicting Peds, #/hr	0	0	0	5	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	6	11	6	6	11



















Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	42	19	0
Stage 1	19	-	-
Stage 2	23	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	967	1056	-
Stage 1	1001	-	-
Stage 2	997	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	958	1051	-
Mov Cap-2 Maneuver	958	-	-
Stage 1	996	-	-
Stage 2	993	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.6	0	2.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	1002	1579
HCM Lane V/C Ratio	-	-	0.011	0.004
HCM Control Delay (s)	-	-	8.6	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	5	10	5	5	10	5	540	10	20	450	20
Future Volume (veh/h)	20	5	10	5	5	10	5	540	10	20	450	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	22	6	0	6	6	4	6	600	0	22	500	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	201	17	0	137	36	23	776	2659	0	724	2609	99
Arrive On Green	0.05	0.05	0.00	0.05	0.05	0.05	0.75	0.75	0.00	0.75	0.75	0.75
Sat Flow, veh/h	1170	319	0	578	663	413	874	3618	0	811	3459	131
Grp Volume(v), veh/h	28	0	0	16	0	0	6	600	0	22	254	265
Grp Sat Flow(s),veh/h/ln	1489	0	0	1654	0	0	874	1763	0	811	1763	1828
Q Serve(g_s), s	0.4	0.0	0.0	0.0	0.0	0.0	0.1	2.4	0.0	0.4	2.0	2.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	0.4	0.0	0.0	2.1	2.4	0.0	2.8	2.0	2.0
Prop In Lane	0.79		0.00	0.37		0.25	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	218	0	0	196	0	0	776	2659	0	724	1329	1378
V/C Ratio(X)	0.13	0.00	0.00	0.08	0.00	0.00	0.01	0.23	0.00	0.03	0.19	0.19
Avail Cap(c_a), veh/h	614	0	0	630	0	0	776	2659	0	724	1329	1378
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	0.0	21.2	0.0	0.0	2.0	1.7	0.0	2.1	1.7	1.7
Incr Delay (d2), s/veh	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.7	0.0	0.0	21.4	0.0	0.0	2.0	1.9	0.0	2.2	2.0	2.0
LnGrp LOS	C	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		28			16			606			541	
Approach Delay, s/veh		21.7			21.4			1.9			2.0	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		7.1		40.0		7.1				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		15.5		35.5		15.5				
Max Q Clear Time (g_c+I1), s		4.4		2.8		4.8		2.4				
Green Ext Time (p_c), s		4.2		0.1		3.2		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				2.7								
HCM 6th LOS				A								

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

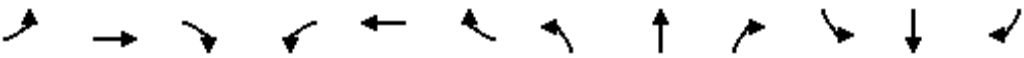
Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	5	5	10	5
Future Vol, veh/h	0	0	5	5	10	5
Conflicting Peds, #/hr	0	0	0	0	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	6	6	11	6
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	42	14	0	0	17	0
Stage 1	14	-	-	-	-	-
Stage 2	28	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	967	1063	-	-	1594	-
Stage 1	1006	-	-	-	-	-
Stage 2	992	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	955	1058	-	-	1586	-
Mov Cap-2 Maneuver	955	-	-	-	-	-
Stage 1	1001	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		4.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	-	1586	-	
HCM Lane V/C Ratio	-	-	-	0.007	-	
HCM Control Delay (s)	-	-	0	7.3	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

# HCM 6th Signalized Intersection Summary

## 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔	↔	↔	↔	
Traffic Volume (veh/h)	30	20	0	370	90	350	0	260	490	290	200	70
Future Volume (veh/h)	30	20	0	370	90	350	0	260	490	290	200	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	33	22	0	256	318	0	0	289	0	306	244	68
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	71	48	0	370	389		0	361		408	321	90
Arrive On Green	0.07	0.07	0.00	0.21	0.21	0.00	0.00	0.20	0.00	0.23	0.23	0.23
Sat Flow, veh/h	1072	715	0	1753	1841	1560	0	1841	1560	1753	1383	385
Grp Volume(v), veh/h	55	0	0	256	318	0	0	289	0	306	0	312
Grp Sat Flow(s),veh/h/ln	1787	0	0	1753	1841	1560	0	1841	1560	1753	0	1768
Q Serve(g_s), s	2.0	0.0	0.0	9.2	11.2	0.0	0.0	10.2	0.0	11.0	0.0	11.2
Cycle Q Clear(g_c), s	2.0	0.0	0.0	9.2	11.2	0.0	0.0	10.2	0.0	11.0	0.0	11.2
Prop In Lane	0.60		0.00	1.00		1.00	0.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	119	0	0	370	389		0	361		408	0	411
V/C Ratio(X)	0.46	0.00	0.00	0.69	0.82		0.00	0.80		0.75	0.00	0.76
Avail Cap(c_a), veh/h	315	0	0	464	487		0	649		798	0	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.6	0.0	0.0	24.8	25.6	0.0	0.0	26.1	0.0	24.3	0.0	24.3
Incr Delay (d2), s/veh	2.8	0.0	0.0	3.2	8.6	0.0	0.0	4.1	0.0	2.8	0.0	2.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	3.8	5.4	0.0	0.0	4.6	0.0	4.5	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.4	0.0	0.0	28.0	34.2	0.0	0.0	30.2	0.0	27.1	0.0	27.2
LnGrp LOS	C	A	A	C	C		A	C		C	A	C
Approach Vol, veh/h	55			574			289			618		
Approach Delay, s/veh	33.4			31.4			30.2			27.2		
Approach LOS	C			C			C			C		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	18.3			19.4			20.8			9.5		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	24.0			18.0			31.0			12.0		
Max Q Clear Time (g_c+I1), s	12.2			13.2			13.2			4.0		
Green Ext Time (p_c), s	1.2			1.2			2.5			0.1		

### Intersection Summary

HCM 6th Ctrl Delay	29.6
HCM 6th LOS	C

### Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary

## 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↗	↘↗	↑↑					↘	↗	↗↗
Traffic Volume (veh/h)	0	510	50	180	580	0	0	0	0	590	0	330
Future Volume (veh/h)	0	510	50	180	580	0	0	0	0	590	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	567	9	200	644	0				656	0	77
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	846	369	567	1828	0				822	0	731
Arrive On Green	0.00	0.24	0.24	0.17	0.52	0.00				0.23	0.00	0.23
Sat Flow, veh/h	0	3618	1537	3428	3618	0				3534	0	3145
Grp Volume(v), veh/h	0	567	9	200	644	0				656	0	77
Grp Sat Flow(s),veh/h/ln	0	1763	1537	1714	1763	0				1767	0	1572
Q Serve(g_s), s	0.0	6.4	0.2	2.3	4.8	0.0				7.7	0.0	0.9
Cycle Q Clear(g_c), s	0.0	6.4	0.2	2.3	4.8	0.0				7.7	0.0	0.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	846	369	567	1828	0				822	0	731
V/C Ratio(X)	0.00	0.67	0.02	0.35	0.35	0.00				0.80	0.00	0.11
Avail Cap(c_a), veh/h	0	2314	1009	1552	4309	0				2000	0	1779
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.2	12.8	16.3	6.3	0.0				16.0	0.0	13.3
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.1	0.0	0.0				0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.2	0.1	0.8	1.2	0.0				2.7	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	12.9	16.5	6.3	0.0				16.7	0.0	13.4
LnGrp LOS	A	B	B	B	A	A				B	A	B
Approach Vol, veh/h		576			844						733	
Approach Delay, s/veh		15.5			8.7						16.3	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.3	16.6		15.3		28.9						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	14.3	8.4		9.7		6.8						
Green Ext Time (p_c), s	0.1	1.5		0.5		1.8						

### Intersection Summary

HCM 6th Ctrl Delay	13.1
HCM 6th LOS	B

### Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑			↑↑	↰	↰	↱	↰			
Traffic Volume (veh/h)	160	940	0	0	710	380	50	0	200	0	0	0
Future Volume (veh/h)	160	940	0	0	710	380	50	0	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	178	1044	0	0	789	8	56	0	128			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	554	2066	0	0	1094	478	576	0	256			
Arrive On Green	0.16	0.59	0.00	0.00	0.31	0.31	0.16	0.00	0.16			
Sat Flow, veh/h	3428	3618	0	0	3618	1541	3534	0	1572			
Grp Volume(v), veh/h	178	1044	0	0	789	8	56	0	128			
Grp Sat Flow(s),veh/h/ln	1714	1763	0	0	1763	1541	1767	0	1572			
Q Serve(g_s), s	2.0	7.6	0.0	0.0	8.7	0.2	0.6	0.0	3.3			
Cycle Q Clear(g_c), s	2.0	7.6	0.0	0.0	8.7	0.2	0.6	0.0	3.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	554	2066	0	0	1094	478	576	0	256			
V/C Ratio(X)	0.32	0.51	0.00	0.00	0.72	0.02	0.10	0.00	0.50			
Avail Cap(c_a), veh/h	1564	4344	0	0	2333	1019	2016	0	897			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.2	5.3	0.0	0.0	13.4	10.5	15.6	0.0	16.7			
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.7	1.6	0.0	0.0	2.9	0.0	0.2	0.0	1.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.4	5.4	0.0	0.0	13.8	10.5	15.6	0.0	17.3			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h	1222			797			184					
Approach Delay, s/veh	7.0			13.7			16.8					
Approach LOS	A			B			B					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	31.7			12.1			19.6			12.1		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	9.6			4.0			10.7			5.3		
Green Ext Time (p_c), s	3.3			0.3			2.1			0.3		

## Intersection Summary

HCM 6th Ctrl Delay	10.3
HCM 6th LOS	B




## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
1a: Park Ave & W 11th St




Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	70	50	750	750	30
Future Vol, veh/h	20	70	50	750	750	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	78	56	833	833	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1379	433	866	0	-	0
Stage 1	850	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	136	571	773	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	118	571	773	-	-	-
Mov Cap-2 Maneuver	118	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	22.2	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	773	-	308	-	-	
HCM Lane V/C Ratio	0.072	-	0.325	-	-	
HCM Control Delay (s)	10	-	22.2	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-	



HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour













Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	780	5	10	810
Future Vol, veh/h	5	20	780	5	10	810
Conflicting Peds, #/hr	5	0	0	5	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	22	867	6	11	900
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1357	447	0	0	883	0
Stage 1	880	-	-	-	-	-
Stage 2	477	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	140	559	-	-	762	-
Stage 1	366	-	-	-	-	-
Stage 2	590	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	134	554	-	-	755	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	362	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.5	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	451	755	-	
HCM Lane V/C Ratio	-	-	0.062	0.015	-	
HCM Control Delay (s)	-	-	13.5	9.8	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Cumulative No Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↕			↕	
Traffic Volume (veh/h)	0	0	0	90	810	110	30	80	0	0	240	20
Future Volume (veh/h)	0	0	0	90	810	110	30	80	0	0	240	20
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.99		1.00	1.00		0.96
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1885	1885	0	0	1856	1856
Adj Flow Rate, veh/h				100	900	100	33	89	0	0	267	14
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	1	1	0	0	3	3
Cap, veh/h				132	1242	145	217	272	0	0	406	21
Arrive On Green				0.42	0.42	0.42	0.23	0.23	0.00	0.00	0.23	0.23
Sat Flow, veh/h				315	2969	347	172	1169	0	0	1743	91
Grp Volume(v), veh/h				583	0	517	122	0	0	0	0	281
Grp Sat Flow(s),veh/h/ln				1840	0	1791	1342	0	0	0	0	1835
Q Serve(g_s), s				7.0	0.0	6.1	0.1	0.0	0.0	0.0	0.0	3.6
Cycle Q Clear(g_c), s				7.0	0.0	6.1	3.7	0.0	0.0	0.0	0.0	3.6
Prop In Lane				0.17		0.19	0.27		0.00	0.00		0.05
Lane Grp Cap(c), veh/h				770	0	749	489	0	0	0	0	427
V/C Ratio(X)				0.76	0.00	0.69	0.25	0.00	0.00	0.00	0.00	0.66
Avail Cap(c_a), veh/h				1783	0	1735	1041	0	0	0	0	1067
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				6.4	0.0	6.1	8.2	0.0	0.0	0.0	0.0	9.0
Incr Delay (d2), s/veh				0.6	0.0	0.4	0.1	0.0	0.0	0.0	0.0	0.6
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.2	0.0	1.0	0.4	0.0	0.0	0.0	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				7.0	0.0	6.6	8.3	0.0	0.0	0.0	0.0	9.6
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					1100			122			281	
Approach Delay, s/veh					6.8			8.3			9.6	
Approach LOS					A			A			A	
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	15.8			10.0			10.0					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	9.0			5.6			5.7					
Green Ext Time (p_c), s	1.7			0.4			0.1					
Intersection Summary												
HCM 6th Ctrl Delay			7.4									
HCM 6th LOS			A									
Notes												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Cumulative No Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	20	870	50	0	0	0	0	90	70	180	160	0
Future Volume (veh/h)	20	870	50	0	0	0	0	90	70	180	160	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.96	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1885	1885	1885				0	1885	1885	1885	1885	0
Adj Flow Rate, veh/h	22	967	45				0	100	78	200	178	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1				0	1	1	1	1	0
Cap, veh/h	28	1286	63				0	344	268	384	269	0
Arrive On Green	0.37	0.37	0.37				0.00	0.36	0.36	0.36	0.36	0.00
Sat Flow, veh/h	76	3483	170				0	965	752	605	754	0
Grp Volume(v), veh/h	546	0	488				0	0	178	378	0	0
Grp Sat Flow(s),veh/h/ln	1881	0	1848				0	0	1717	1359	0	0
Q Serve(g_s), s	8.5	0.0	7.4				0.0	0.0	2.4	6.0	0.0	0.0
Cycle Q Clear(g_c), s	8.5	0.0	7.4				0.0	0.0	2.4	8.4	0.0	0.0
Prop In Lane	0.04		0.09				0.00		0.44	0.53		0.00
Lane Grp Cap(c), veh/h	695	0	682				0	0	612	652	0	0
V/C Ratio(X)	0.79	0.00	0.72				0.00	0.00	0.29	0.58	0.00	0.00
Avail Cap(c_a), veh/h	1435	0	1409				0	0	786	799	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.2	0.0	8.9				0.0	0.0	7.6	9.6	0.0	0.0
Incr Delay (d2), s/veh	0.8	0.0	0.5				0.0	0.0	0.1	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	2.0				0.0	0.0	0.6	1.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.9	0.0	9.4				0.0	0.0	7.7	9.9	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h	1034						178			378		
Approach Delay, s/veh	9.7						7.7			9.9		
Approach LOS	A						A			A		
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	17.1			15.7			15.7					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	10.5			10.4			4.4					
Green Ext Time (p_c), s	1.5			0.5			0.3					

### Intersection Summary

HCM 6th Ctrl Delay	9.5
HCM 6th LOS	A

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.



















HCM 6th TWSC  
4: Ivy St & W 12th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	2.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	5	5	5	10	5	70	5	10	80	70
Future Vol, veh/h	40	5	5	5	5	10	5	70	5	10	80	70
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	44	6	6	6	6	11	6	78	6	11	89	78
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	262	251	138	254	287	86	172	0	0	84	0	0
Stage 1	155	155	-	93	93	-	-	-	-	-	-	-
Stage 2	107	96	-	161	194	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	695	656	916	703	626	978	1417	-	-	1526	-	-
Stage 1	852	773	-	919	822	-	-	-	-	-	-	-
Stage 2	903	819	-	846	744	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	670	645	907	685	615	973	1410	-	-	1526	-	-
Mov Cap-2 Maneuver	670	645	-	685	615	-	-	-	-	-	-	-
Stage 1	844	763	-	915	819	-	-	-	-	-	-	-
Stage 2	879	816	-	824	734	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.7		9.8		0.5		0.5					
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1410	-	-	685	778	1526	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.081	0.029	0.007	-	-				
HCM Control Delay (s)	7.6	0	-	10.7	9.8	7.4	0	-				
HCM Lane LOS	A	A	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-				




# HCM 6th Signalized Intersection Summary 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	30	20	20	20	20	20	710	20	5	750	10
Future Volume (veh/h)	20	30	20	20	20	20	20	710	20	5	750	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.99		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	33	1	22	22	1	22	789	22	6	833	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	266	131	4	295	111	4	531	1849	52	543	1885	23
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.52	0.52	0.52	0.52	0.52	0.52
Sat Flow, veh/h	569	1073	30	690	909	36	651	3527	98	671	3595	43
Grp Volume(v), veh/h	56	0	0	45	0	0	22	397	414	6	412	431
Grp Sat Flow(s),veh/h/ln	1672	0	0	1636	0	0	651	1777	1849	671	1777	1861
Q Serve(g_s), s	0.2	0.0	0.0	0.0	0.0	0.0	0.6	3.5	3.5	0.1	3.6	3.6
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.6	0.0	0.0	4.2	3.5	3.5	3.6	3.6	3.6
Prop In Lane	0.39		0.02	0.49		0.02	1.00		0.05	1.00		0.02
Lane Grp Cap(c), veh/h	401	0	0	410	0	0	531	932	969	543	932	976
V/C Ratio(X)	0.14	0.00	0.00	0.11	0.00	0.00	0.04	0.43	0.43	0.01	0.44	0.44
Avail Cap(c_a), veh/h	1357	0	0	1333	0	0	779	1607	1672	798	1607	1683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	0.0	10.1	0.0	0.0	5.0	3.7	3.7	4.8	3.7	3.7
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.3	0.4	0.0	0.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	0.0	10.1	0.0	0.0	5.1	4.1	4.1	4.8	4.2	4.2
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		56			45			833			849	
Approach Delay, s/veh		10.2			10.1			4.2			4.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.3		7.1		18.3		7.1				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		6.2		2.7		5.6		2.6				
Green Ext Time (p_c), s		6.7		0.1		6.9		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			4.5									
HCM 6th LOS			A									




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	3.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	20	30	10	20	30
Future Vol, veh/h	10	20	30	10	20	30
Conflicting Peds, #/hr	10	0	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	11	22	33	11	22	33
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	136	49	0	0	54	0
Stage 1	49	-	-	-	-	-
Stage 2	87	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	862	1025	-	-	1564	-
Stage 1	979	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	833	1015	-	-	1549	-
Mov Cap-2 Maneuver	833	-	-	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	919	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	8.9	0		2.9		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	946	1549	-	
HCM Lane V/C Ratio	-	-	0.035	0.014	-	
HCM Control Delay (s)	-	-	8.9	7.4	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	0.1	0	-	

HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	20	20	30	30	10
Future Vol, veh/h	5	20	20	30	30	10
Conflicting Peds, #/hr	0	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	6	22	22	33	33	11
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	126	59	54	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	874	1012	1564	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	844	993	1549	-	-	-
Mov Cap-2 Maneuver	844	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	941	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	8.9	2.9		0		
HCM LOS	A					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1549	-	959	-	-	
HCM Lane V/C Ratio	0.014	-	0.029	-	-	
HCM Control Delay (s)	7.4	-	8.9	-	-	
HCM Lane LOS	A	-	A	-	-	
HCM 95th %tile Q(veh)	0	-	0.1	-	-	

HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour



















Intersection												
Int Delay, s/veh	1.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	0	0	5	5	5	0	30	10	5	30	5
Future Vol, veh/h	0	0	0	5	5	5	0	30	10	5	30	5
Conflicting Peds, #/hr	0	0	0	5	0	0	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	0	0	0	6	6	6	0	33	11	6	33	6
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	93	97	41	97	95	44	39	0	0	49	0	0
Stage 1	48	48	-	44	44	-	-	-	-	-	-	-
Stage 2	45	49	-	53	51	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	895	797	1036	890	799	1032	1584	-	-	1571	-	-
Stage 1	971	859	-	975	862	-	-	-	-	-	-	-
Stage 2	974	858	-	965	856	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	882	790	1031	878	792	1027	1584	-	-	1564	-	-
Mov Cap-2 Maneuver	882	790	-	878	792	-	-	-	-	-	-	-
Stage 1	971	856	-	970	858	-	-	-	-	-	-	-
Stage 2	962	854	-	957	853	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	0		9.1		0		0.9					
HCM LOS	A		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1584	-	-	-	889	1564	-	-				
HCM Lane V/C Ratio	-	-	-	-	0.019	0.004	-	-				
HCM Control Delay (s)	0	-	-	0	9.1	7.3	0	-				
HCM Lane LOS	A	-	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0	-	-				



# HCM 6th Signalized Intersection Summary

## 8: Park Ave & W 16th St/E 16th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	30	40	20	40	20	30	705	30	10	740	10
Future Volume (veh/h)	35	30	40	20	40	20	30	705	30	10	740	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.97	0.98		0.99	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	33	4	22	44	2	33	783	33	11	822	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	300	134	13	235	194	8	510	1786	75	515	1851	23
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.51	0.51	0.51	0.51	0.51	0.51
Sat Flow, veh/h	648	876	85	389	1271	50	658	3469	146	668	3595	44
Grp Volume(v), veh/h	76	0	0	68	0	0	33	401	415	11	406	426
Grp Sat Flow(s),veh/h/ln	1609	0	0	1710	0	0	658	1777	1838	668	1777	1862
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	0.9	3.8	3.8	0.3	3.9	3.9
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.9	0.0	0.0	4.8	3.8	3.8	4.1	3.9	3.9
Prop In Lane	0.51		0.05	0.32		0.03	1.00		0.08	1.00		0.02
Lane Grp Cap(c), veh/h	447	0	0	437	0	0	510	915	946	515	915	958
V/C Ratio(X)	0.17	0.00	0.00	0.16	0.00	0.00	0.06	0.44	0.44	0.02	0.44	0.44
Avail Cap(c_a), veh/h	1239	0	0	1285	0	0	731	1511	1563	739	1511	1583
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.1	0.0	0.0	10.1	0.0	0.0	5.6	4.1	4.1	5.4	4.1	4.1
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.5	0.5	0.0	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.3	0.0	0.0	0.1	0.5	0.5	0.0	0.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.2	0.0	0.0	10.1	0.0	0.0	5.7	4.6	4.6	5.4	4.6	4.6
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		76			68			849			843	
Approach Delay, s/veh		10.2			10.1			4.6			4.6	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		18.9		8.1		18.9		8.1				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		6.8		3.0		6.1		2.9				
Green Ext Time (p_c), s		6.7		0.2		6.8		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									





HCM 6th AWSC  
9: Broadway St & W 16th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection




Intersection Delay, s/veh 7.3

Intersection LOS A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	50	5	5	40	10	5	20	15	5	20	10
Future Vol, veh/h	5	50	5	5	40	10	5	20	15	5	20	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	6	56	6	6	44	11	6	22	17	6	22	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.4	7.3	7.2	7.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	8%	9%	14%
Vol Thru, %	50%	83%	73%	57%
Vol Right, %	38%	8%	18%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	60	55	35
LT Vol	5	5	5	5
Through Vol	20	50	40	20
RT Vol	15	5	10	10
Lane Flow Rate	44	67	61	39
Geometry Grp	1	1	1	1
Degree of Util (X)	0.049	0.075	0.068	0.043
Departure Headway (Hd)	3.95	4.059	4.006	4.011
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	897	878	889	884
Service Time	2.015	2.105	2.053	2.078
HCM Lane V/C Ratio	0.049	0.076	0.069	0.044
HCM Control Delay	7.2	7.4	7.3	7.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.2	0.1

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	0	5	40	20	0
Future Vol, veh/h	0	0	5	40	20	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	6	44	22	0
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	50	0	-	0	28	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	0	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1557	-	-	-	987	1047
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1557	-	-	-	987	1047
Mov Cap-2 Maneuver	-	-	-	-	987	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		8.7		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1557	-	-	-	987	
HCM Lane V/C Ratio	-	-	-	-	0.023	
HCM Control Delay (s)	0	-	-	-	8.7	
HCM Lane LOS	A	-	-	-	A	
HCM 95th %tile Q(veh)	0	-	-	-	0.1	

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	1.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕		↕	↕	
Traffic Vol, veh/h	10	5	20	5	5	10	40	775	5	5	790	10
Future Vol, veh/h	10	5	20	5	5	10	40	775	5	5	790	10
Conflicting Peds, #/hr	0	0	0	5	0	5	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	70	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	6	22	6	6	11	44	861	6	6	878	11





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1433	1871	460	1421	1873	449	899	0	0	877	0	0
Stage 1	906	906	-	962	962	-	-	-	-	-	-	-
Stage 2	527	965	-	459	911	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	95	71	548	97	71	557	751	-	-	766	-	-
Stage 1	297	353	-	275	332	-	-	-	-	-	-	-
Stage 2	502	331	-	551	351	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	81	65	540	81	65	549	744	-	-	759	-	-
Mov Cap-2 Maneuver	81	65	-	81	65	-	-	-	-	-	-	-
Stage 1	277	347	-	256	309	-	-	-	-	-	-	-
Stage 2	452	308	-	513	345	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	38.1		39.3		0.5		0.1	
HCM LOS	E		E					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	744	-	-	147 127	759	-	-
HCM Lane V/C Ratio	0.06	-	-	0.265 0.175	0.007	-	-
HCM Control Delay (s)	10.1	-	-	38.1 39.3	9.8	-	-
HCM Lane LOS	B	-	-	E E	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1 0.6	0	-	-

HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	15	15	5	30	5	5	20	5	5	20	5
Future Vol, veh/h	10	15	15	5	30	5	5	20	5	5	20	5
Conflicting Peds, #/hr	5	0	0	0	0	5	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	11	17	17	6	33	6	6	22	6	6	22	6
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	109	97	35	101	97	40	38	0	0	38	0	0
Stage 1	47	47	-	47	47	-	-	-	-	-	-	-
Stage 2	62	50	-	54	50	-	-	-	-	-	-	-
Critical Hdwy	7.14	6.54	6.24	7.14	6.54	6.24	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.14	5.54	-	6.14	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.536	4.036	3.336	3.536	4.036	3.336	2.236	-	-	2.236	-	-
Pot Cap-1 Maneuver	865	789	1032	875	789	1026	1559	-	-	1559	-	-
Stage 1	962	852	-	962	852	-	-	-	-	-	-	-
Stage 2	944	849	-	953	849	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	815	767	1022	833	767	1011	1544	-	-	1544	-	-
Mov Cap-2 Maneuver	815	767	-	833	767	-	-	-	-	-	-	-
Stage 1	949	840	-	949	840	-	-	-	-	-	-	-
Stage 2	894	837	-	915	837	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	9.4			9.8			1.2			1.2		
HCM LOS	A			A								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1544	-	-	860	799	1544	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.052	0.056	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	9.4	9.8	7.3	0	-				
HCM Lane LOS	A	A	-	A	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	-	-				
















HCM 6th TWSC  
13: Normal Ave & W 18th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	4.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	30	0	5	30	5	0	20	5	5	20	5
Future Vol, veh/h	5	30	0	5	30	5	0	20	5	5	20	5
Conflicting Peds, #/hr	0	0	5	5	0	0	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	33	0	6	33	6	0	22	6	6	22	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	39	0	0	38	0	0	117	101	43	112	98	41
Stage 1	-	-	-	-	-	-	50	50	-	48	48	-
Stage 2	-	-	-	-	-	-	67	51	-	64	50	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1571	-	-	1572	-	-	859	789	1027	866	792	1030
Stage 1	-	-	-	-	-	-	963	853	-	965	855	-
Stage 2	-	-	-	-	-	-	943	852	-	947	853	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1571	-	-	1565	-	-	823	779	1017	833	782	1025
Mov Cap-2 Maneuver	-	-	-	-	-	-	823	779	-	833	782	-
Stage 1	-	-	-	-	-	-	954	845	-	961	852	-
Stage 2	-	-	-	-	-	-	905	849	-	909	845	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.9			9.6			9.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	817	1571	-	-	1565	-	-	823				
HCM Lane V/C Ratio	0.034	0.004	-	-	0.004	-	-	0.041				
HCM Control Delay (s)	9.6	7.3	0	-	7.3	0	-	9.6				
HCM Lane LOS	A	A	A	-	A	A	-	A				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1				

# HCM 6th Signalized Intersection Summary 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	 		 			 
Traffic Volume (veh/h)	130	320	480	150	390	450
Future Volume (veh/h)	130	320	480	150	390	450
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.96	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	144	60	533	167	433	500
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	441	663	1007	433	517	2381
Arrive On Green	0.13	0.13	0.28	0.28	0.29	0.67
Sat Flow, veh/h	3456	1585	3647	1529	1781	3647
Grp Volume(v), veh/h	144	60	533	167	433	500
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1529	1781	1777
Q Serve(g_s), s	2.0	1.2	6.6	4.6	11.8	2.8
Cycle Q Clear(g_c), s	2.0	1.2	6.6	4.6	11.8	2.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	441	663	1007	433	517	2381
V/C Ratio(X)	0.33	0.09	0.53	0.39	0.84	0.21
Avail Cap(c_a), veh/h	1731	1254	2053	884	1166	4757
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.6	9.1	15.7	15.0	17.3	3.3
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.8	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	2.3	1.5	4.5	0.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	20.8	9.2	16.3	15.8	21.0	3.3
LnGrp LOS	C	A	B	B	C	A
Approach Vol, veh/h	204		700			933
Approach Delay, s/veh	17.4		16.2			11.5
Approach LOS	B		B			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	40.3		20.1		20.2	11.6
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 70		34.0		30.0	26.0
Max Q Clear Time (g_c+I1), s	4.8		13.8		8.6	4.0
Green Ext Time (p_c), s	3.5		1.3		5.6	0.3
Intersection Summary						
HCM 6th Ctrl Delay			13.9			
HCM 6th LOS			B			
Notes						

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	30	0	630	550	30
Future Vol, veh/h	0	30	0	630	550	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	33	0	700	611	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	322	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	674	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	674	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.6	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 674		-	-		
HCM Lane V/C Ratio	- 0.049		-	-		
HCM Control Delay (s)	- 10.6		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 0.2		-	-		






HCM 6th TWSC  
15: Normal Ave & W 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection

Int Delay, s/veh 2.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	5	20	5	5	10
Future Vol, veh/h	5	5	20	5	5	10
Conflicting Peds, #/hr	5	5	0	0	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	6	22	6	6	11

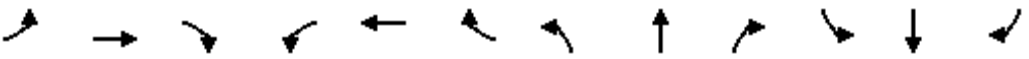
Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	58	35	0
Stage 1	30	-	-
Stage 2	28	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	947	1035	-
Stage 1	990	-	-
Stage 2	992	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	934	1025	-
Mov Cap-2 Maneuver	934	-	-
Stage 1	985	-	-
Stage 2	983	-	-

Approach	WB	NB	SB
HCM Control Delay, s	8.7	0	2.4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	977	1565
HCM Lane V/C Ratio	-	-	0.011	0.004
HCM Control Delay (s)	-	-	8.7	7.3
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0	0




# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↑↑		↔	↑↑	
Traffic Volume (veh/h)	30	5	5	20	5	10	20	550	20	20	510	30
Future Volume (veh/h)	30	5	5	20	5	10	20	550	20	20	510	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.98		1.00	0.97		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	33	6	-5	22	6	0	22	611	20	22	567	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	66	0	204	18	0	716	2596	85	696	2537	134
Arrive On Green	0.06	0.06	0.00	0.06	0.06	0.00	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	1476	268	-224	1149	313	0	819	3508	115	793	3427	181
Grp Volume(v), veh/h	0	0	0	28	0	0	22	309	322	22	294	303
Grp Sat Flow(s),veh/h/ln	0	0	0	1462	0	0	819	1777	1846	793	1777	1831
Q Serve(g_s), s	0.0	0.0	0.0	0.9	0.0	0.0	0.4	2.6	2.6	0.4	2.4	2.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.9	0.0	0.0	2.8	2.6	2.6	3.0	2.4	2.4
Prop In Lane	0.97		-0.15	0.79		0.00	1.00		0.06	1.00		0.10
Lane Grp Cap(c), veh/h	0	0	0	222	0	0	716	1315	1366	696	1315	1356
V/C Ratio(X)	0.00	0.00	0.00	0.13	0.00	0.00	0.03	0.24	0.24	0.03	0.22	0.22
Avail Cap(c_a), veh/h	0	0	0	615	0	0	716	1315	1366	696	1315	1356
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	21.3	0.0	0.0	2.4	1.9	1.9	2.4	1.9	1.9
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.4	0.4	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.2	0.0	0.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	21.6	0.0	0.0	2.4	2.4	2.3	2.5	2.3	2.3
LnGrp LOS	A	A	A	C	A	A	A	A	A	A	A	A
Approach Vol, veh/h		0			28			653			619	
Approach Delay, s/veh		0.0			21.6			2.3			2.3	
Approach LOS					C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		7.3		40.0		7.3				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		35.0		15.5		35.0		15.5				
Max Q Clear Time (g_c+I1), s		4.8		0.0		5.0		2.9				
Green Ext Time (p_c), s		5.9		0.0		5.5		0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				2.7								
HCM 6th LOS				A								





















HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	1.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	10	5	5	5
Future Vol, veh/h	0	0	10	5	5	5
Conflicting Peds, #/hr	0	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	0	11	6	6	6
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	32	19	0	0	17	0
Stage 1	14	-	-	-	-	-
Stage 2	18	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	979	1056	-	-	1594	-
Stage 1	1006	-	-	-	-	-
Stage 2	1002	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	975	1051	-	-	1594	-
Mov Cap-2 Maneuver	975	-	-	-	-	-
Stage 1	1006	-	-	-	-	-
Stage 2	998	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	0	0		3.6		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	-	1594	-	
HCM Lane V/C Ratio	-	-	-	0.003	-	
HCM Control Delay (s)	-	-	0	7.3	-	
HCM Lane LOS	-	-	A	A	-	
HCM 95th %tile Q(veh)	-	-	-	0	-	

# HCM 6th Signalized Intersection Summary 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	60	70	0	430	40	240	0	200	570	400	220	40
Future Volume (veh/h)	60	70	0	430	40	240	0	200	570	400	220	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	67	78	0	509	0	0	0	222	0	366	353	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	87	101	0	649	0		0	294		483	442	55
Arrive On Green	0.10	0.10	0.00	0.18	0.00	0.00	0.00	0.16	0.00	0.27	0.27	0.27
Sat Flow, veh/h	838	976	0	3534	0	1572	0	1856	1572	1767	1616	201
Grp Volume(v), veh/h	145	0	0	509	0	0	0	222	0	366	0	397
Grp Sat Flow(s),veh/h/ln	1814	0	0	1767	0	1572	0	1856	1572	1767	0	1818
Q Serve(g_s), s	5.5	0.0	0.0	9.8	0.0	0.0	0.0	8.1	0.0	13.5	0.0	14.5
Cycle Q Clear(g_c), s	5.5	0.0	0.0	9.8	0.0	0.0	0.0	8.1	0.0	13.5	0.0	14.5
Prop In Lane	0.46		0.00	1.00		1.00	0.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	188	0	0	649	0		0	294		483	0	497
V/C Ratio(X)	0.77	0.00	0.00	0.78	0.00		0.00	0.75		0.76	0.00	0.80
Avail Cap(c_a), veh/h	306	0	0	893	0		0	625		769	0	791
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	0.0	27.7	0.0	0.0	0.0	28.6	0.0	23.7	0.0	24.0
Incr Delay (d2), s/veh	6.6	0.0	0.0	3.2	0.0	0.0	0.0	3.9	0.0	2.5	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	0.0	4.1	0.0	0.0	0.0	3.7	0.0	5.4	0.0	6.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.7	0.0	0.0	30.9	0.0	0.0	0.0	32.6	0.0	26.2	0.0	27.1
LnGrp LOS	D	A	A	C	A		A	C		C	A	C
Approach Vol, veh/h	145				509			222		763		
Approach Delay, s/veh	37.7				30.9			32.6		26.6		
Approach LOS	D				C			C		C		
Timer - Assigned Phs	2			4			6		8			
Phs Duration (G+Y+Rc), s	16.3			18.1			24.5		12.4			
Change Period (Y+Rc), s	5.0			5.0			5.0		5.0			
Max Green Setting (Gmax), s	24.0			18.0			31.0		12.0			
Max Q Clear Time (g_c+I1), s	10.1			11.8			16.5		7.5			
Green Ext Time (p_c), s	0.9			1.0			3.0		0.3			

## Intersection Summary

HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

## Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	1140	90	330	610	0	0	0	0	960	0	500
Future Volume (veh/h)	0	1140	90	330	610	0	0	0	0	960	0	500
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1200	37	347	642	0				1011	0	526
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1285	573	435	1961	0				1093	0	972
Arrive On Green	0.00	0.36	0.36	0.13	0.55	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	3170
Grp Volume(v), veh/h	0	1200	37	347	642	0				1011	0	526
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	25.3	1.2	7.6	7.7	0.0				21.4	0.0	10.7
Cycle Q Clear(g_c), s	0.0	25.3	1.2	7.6	7.7	0.0				21.4	0.0	10.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1285	573	435	1961	0				1093	0	972
V/C Ratio(X)	0.00	0.93	0.06	0.80	0.33	0.00				0.93	0.00	0.54
Avail Cap(c_a), veh/h	0	1325	591	889	2467	0				1145	0	1019
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.9	16.2	33.0	9.5	0.0				26.1	0.0	22.4
Incr Delay (d2), s/veh	0.0	11.7	0.0	1.3	0.0	0.0				11.8	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.0	0.4	3.2	2.7	0.0				10.3	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	35.6	16.2	34.3	9.6	0.0				37.9	0.0	22.7
LnGrp LOS	A	D	B	C	A	A				D	A	C
Approach Vol, veh/h		1237			989						1537	
Approach Delay, s/veh		35.0			18.3						32.7	
Approach LOS		D			B						C	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	14.8	34.1		28.9		48.9						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	19.6	27.3		23.4		9.7						
Green Ext Time (p_c), s	0.2	0.8		0.5		1.8						

## Intersection Summary

HCM 6th Ctrl Delay	29.7
HCM 6th LOS	C

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Cumulative No Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑			↑↑	↰	↰	↱	↰			
Traffic Volume (veh/h)	440	1680	0	0	850	1000	90	0	350	0	0	0
Future Volume (veh/h)	440	1680	0	0	850	1000	90	0	350	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	463	1768	0	0	895	633	95	0	285			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	574	2269	0	0	1431	629	744	0	331			
Arrive On Green	0.17	0.64	0.00	0.00	0.40	0.40	0.21	0.00	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	3563	0	1585			
Grp Volume(v), veh/h	463	1768	0	0	895	633	95	0	285			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	0	1585			
Q Serve(g_s), s	9.3	25.8	0.0	0.0	14.5	29.0	1.6	0.0	12.5			
Cycle Q Clear(g_c), s	9.3	25.8	0.0	0.0	14.5	29.0	1.6	0.0	12.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	574	2269	0	0	1431	629	744	0	331			
V/C Ratio(X)	0.81	0.78	0.00	0.00	0.63	1.01	0.13	0.00	0.86			
Avail Cap(c_a), veh/h	960	2665	0	0	1431	629	1237	0	550			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.9	9.4	0.0	0.0	17.2	21.5	23.2	0.0	27.5			
Incr Delay (d2), s/veh	1.0	1.1	0.0	0.0	0.6	37.5	0.0	0.0	3.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.8	8.0	0.0	0.0	5.5	16.1	0.6	0.0	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	10.4	0.0	0.0	17.8	59.0	23.2	0.0	31.1			
LnGrp LOS	C	B	A	A	B	F	C	A	C			
Approach Vol, veh/h	2231			1528			380					
Approach Delay, s/veh	14.5			34.9			29.1					
Approach LOS	B			C			C					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	52.0			17.0			35.0			20.0		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	27.8			11.3			31.0			14.5		
Green Ext Time (p_c), s	6.9			0.7			0.0			0.6		

## Intersection Summary

HCM 6th Ctrl Delay	23.3
HCM 6th LOS	C

## Notes




User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Appendix E –  
**Cumulative Plus Project  
Conditions**  
Peak Hour Traffic Volume  
Forecasts, Lane Configurations,  
and Technical Calculations

HCM 6th TWSC  
1a: Park Ave & W 11th St




Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	2.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	40	50	1020	560	210
Future Vol, veh/h	40	40	50	1020	560	210
Conflicting Peds, #/hr	0	0	10	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	44	44	56	1133	622	233
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1428	438	865	0	-	0
Stage 1	749	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Critical Hdwy	6.86	6.96	4.16	-	-	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	2.23	-	-	-
Pot Cap-1 Maneuver	125	564	767	-	-	-
Stage 1	425	-	-	-	-	-
Stage 2	462	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	98	559	760	-	-	-
Mov Cap-2 Maneuver	98	-	-	-	-	-
Stage 1	337	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	48.7	0.5		0		
HCM LOS	E					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	760	-	167	-	-	
HCM Lane V/C Ratio	0.073	-	0.532	-	-	
HCM Control Delay (s)	10.1	-	48.7	-	-	
HCM Lane LOS	B	-	E	-	-	
HCM 95th %tile Q(veh)	0.2	-	2.7	-	-	



HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour













Intersection						
Int Delay, s/veh	0.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	30	1040	10	20	580
Future Vol, veh/h	10	30	1040	10	20	580
Conflicting Peds, #/hr	0	0	0	10	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	33	1156	11	22	644
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1538	594	0	0	1177	0
Stage 1	1172	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Critical Hdwy	6.86	6.96	-	-	4.16	-
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.33	-	-	2.23	-
Pot Cap-1 Maneuver	105	446	-	-	584	-
Stage 1	255	-	-	-	-	-
Stage 2	669	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	98	442	-	-	578	-
Mov Cap-2 Maneuver	198	-	-	-	-	-
Stage 1	252	-	-	-	-	-
Stage 2	630	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	17.3	0		0.4		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	338	578	-	
HCM Lane V/C Ratio	-	-	0.131	0.038	-	
HCM Control Delay (s)	-	-	17.3	11.5	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-	

# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Cumulative Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↱			↰	
Traffic Volume (veh/h)	0	0	0	90	540	150	90	260	0	0	120	5
Future Volume (veh/h)	0	0	0	90	540	150	90	260	0	0	120	5
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.98		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1856	1856	1856	1856	1856	0	0	1856	1856
Adj Flow Rate, veh/h				100	600	121	100	289	0	0	133	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				3	3	3	3	3	0	0	3	3
Cap, veh/h				140	876	186	270	459	0	0	615	0
Arrive On Green				0.34	0.34	0.34	0.33	0.33	0.00	0.00	0.33	0.00
Sat Flow, veh/h				418	2613	555	309	1384	0	0	1856	0
Grp Volume(v), veh/h				439	0	382	389	0	0	0	133	0
Grp Sat Flow(s),veh/h/ln				1835	0	1751	1694	0	0	0	1856	0
Q Serve(g_s), s				5.6	0.0	5.0	2.8	0.0	0.0	0.0	1.4	0.0
Cycle Q Clear(g_c), s				5.6	0.0	5.0	5.2	0.0	0.0	0.0	1.4	0.0
Prop In Lane				0.23		0.32	0.26		0.00	0.00		0.00
Lane Grp Cap(c), veh/h				615	0	587	729	0	0	0	615	0
V/C Ratio(X)				0.71	0.00	0.65	0.53	0.00	0.00	0.00	0.22	0.00
Avail Cap(c_a), veh/h				1699	0	1622	1096	0	0	0	1031	0
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				7.8	0.0	7.6	7.7	0.0	0.0	0.0	6.5	0.0
Incr Delay (d2), s/veh				0.6	0.0	0.5	0.2	0.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	1.1	1.1	0.0	0.0	0.0	0.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				8.4	0.0	8.1	7.9	0.0	0.0	0.0	6.6	0.0
LnGrp LOS				A	A	A	A	A	A	A	A	A
Approach Vol, veh/h					821			389			133	
Approach Delay, s/veh					8.3			7.9			6.6	
Approach LOS					A			A			A	
Timer - Assigned Phs	2			4			8					
Phs Duration (G+Y+Rc), s	14.0			12.9			12.9					
Change Period (Y+Rc), s	* 5			* 4			* 4					
Max Green Setting (Gmax), s	* 25			* 15			* 15					
Max Q Clear Time (g_c+I1), s	7.6			3.4			7.2					
Green Ext Time (p_c), s	1.2			0.2			0.6					
Intersection Summary												
HCM 6th Ctrl Delay				8.0								
HCM 6th LOS				A								
Notes												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Cumulative Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	20	730	100	0	0	0	0	330	90	80	140	0
Future Volume (veh/h)	20	730	100	0	0	0	0	330	90	80	140	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.94	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1856	1856	1856				0	1856	1856	1856	1856	0
Adj Flow Rate, veh/h	22	811	81				0	367	48	89	156	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	30	1141	120				0	540	71	238	309	0
Arrive On Green	0.35	0.35	0.35				0.00	0.34	0.34	0.34	0.34	0.00
Sat Flow, veh/h	84	3218	339				0	1594	209	209	911	0
Grp Volume(v), veh/h	486	0	428				0	0	415	245	0	0
Grp Sat Flow(s),veh/h/ln	1851	0	1789				0	0	1803	1120	0	0
Q Serve(g_s), s	6.8	0.0	6.0				0.0	0.0	5.8	0.7	0.0	0.0
Cycle Q Clear(g_c), s	6.8	0.0	6.0				0.0	0.0	5.8	6.5	0.0	0.0
Prop In Lane	0.05		0.19				0.00		0.12	0.36		0.00
Lane Grp Cap(c), veh/h	657	0	635				0	0	611	547	0	0
V/C Ratio(X)	0.74	0.00	0.67				0.00	0.00	0.68	0.45	0.00	0.00
Avail Cap(c_a), veh/h	1576	0	1523				0	0	921	784	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	8.3	0.0	8.0				0.0	0.0	8.3	7.6	0.0	0.0
Incr Delay (d2), s/veh	0.6	0.0	0.5				0.0	0.0	0.5	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.4				0.0	0.0	1.4	0.7	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	8.9	0.0	8.5				0.0	0.0	8.8	7.8	0.0	0.0
LnGrp LOS	A	A	A				A	A	A	A	A	A
Approach Vol, veh/h		914						415			245	
Approach Delay, s/veh		8.7						8.8			7.8	
Approach LOS		A						A			A	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		15.4		14.0				14.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		8.8		8.5				7.8				
Green Ext Time (p_c), s		1.3		0.4				0.6				

### Intersection Summary

HCM 6th Ctrl Delay	8.6
HCM 6th LOS	A

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St



















Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	0	5	5	10	0	350	5	5	200	30
Future Vol, veh/h	40	5	0	5	5	10	0	350	5	5	200	30
Conflicting Peds, #/hr	10	0	5	5	0	10	25	0	30	20	0	15
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	44	6	0	6	6	11	0	389	6	6	222	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	687	701	269	681	714	432	280	0	0	425	0	0
Stage 1	276	276	-	422	422	-	-	-	-	-	-	-
Stage 2	411	425	-	259	292	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	360	362	767	363	355	621	1277	-	-	1129	-	-
Stage 1	728	680	-	607	587	-	-	-	-	-	-	-
Stage 2	616	585	-	744	669	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	336	341	745	345	334	598	1247	-	-	1097	-	-
Mov Cap-2 Maneuver	336	341	-	345	334	-	-	-	-	-	-	-
Stage 1	711	660	-	589	570	-	-	-	-	-	-	-
Stage 2	593	568	-	730	649	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	17.5		13.8		0		0.2					
HCM LOS	C		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1247	-	-	337	433	1097	-	-				
HCM Lane V/C Ratio	-	-	-	0.148	0.051	0.005	-	-				
HCM Control Delay (s)	0	-	-	17.5	13.8	8.3	0	-				
HCM Lane LOS	A	-	-	C	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.2	0	-	-				

# HCM 6th Signalized Intersection Summary




## 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	40	70	10	60	10	60	860	10	10	530	5
Future Volume (veh/h)	10	40	70	10	60	10	60	860	10	10	530	5
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.98	0.99		0.97	1.00		0.97	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	11	44	6	11	67	1	67	956	10	11	589	6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	180	194	24	169	228	3	619	1919	20	468	1920	20
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	204	1361	171	163	1601	23	815	3573	37	576	3575	36
Grp Volume(v), veh/h	61	0	0	79	0	0	67	472	494	11	290	305
Grp Sat Flow(s),veh/h/ln	1735	0	0	1786	0	0	815	1763	1848	576	1763	1849
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	1.4	4.8	4.8	0.3	2.6	2.6
Cycle Q Clear(g_c), s	0.8	0.0	0.0	1.1	0.0	0.0	4.0	4.8	4.8	5.1	2.6	2.6
Prop In Lane	0.18		0.10	0.14		0.01	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	399	0	0	401	0	0	619	947	992	468	947	993
V/C Ratio(X)	0.15	0.00	0.00	0.20	0.00	0.00	0.11	0.50	0.50	0.02	0.31	0.31
Avail Cap(c_a), veh/h	1242	0	0	1274	0	0	849	1443	1512	631	1443	1513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.7	0.0	0.0	10.8	0.0	0.0	4.7	4.1	4.1	5.7	3.6	3.6
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.6	0.6	0.0	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	0.3	0.0	0.0	0.1	0.6	0.6	0.0	0.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	10.8	0.0	0.0	10.9	0.0	0.0	4.8	4.7	4.7	5.8	3.9	3.9
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		61			79			1033			606	
Approach Delay, s/veh		10.8			10.9			4.7			3.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.1		8.0		20.1		8.0				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		6.8		2.8		7.1		3.1				
Green Ext Time (p_c), s		8.2		0.1		4.6		0.2				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				4.9								
HCM 6th LOS				A								




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	6.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	120	40	5	120	20
Future Vol, veh/h	5	120	40	5	120	20
Conflicting Peds, #/hr	1	6	0	5	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	6	133	44	6	133	22
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	341	58	0	0	55	0
Stage 1	52	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.43	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	-	-	2.227	-
Pot Cap-1 Maneuver	653	1005	-	-	1544	-
Stage 1	968	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	592	994	-	-	1537	-
Mov Cap-2 Maneuver	592	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	9.3	0		6.5		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	- 968		1537	-	
HCM Lane V/C Ratio	-	- 0.143		0.087	-	
HCM Control Delay (s)	-	- 9.3		7.6	0	
HCM Lane LOS	-	- A		A	A	
HCM 95th %tile Q(veh)	-	- 0.5		0.3	-	





HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection						
Int Delay, s/veh	6.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	30	110	120	40	30	20
Future Vol, veh/h	30	110	120	40	30	20
Conflicting Peds, #/hr	2	7	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	33	122	133	44	33	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	361	56	60	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	312	-	-	-	-	-
Critical Hdwy	6.43	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.327	2.227	-	-	-
Pot Cap-1 Maneuver	636	1008	1537	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	740	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	574	997	1530	-	-	-
Mov Cap-2 Maneuver	574	-	-	-	-	-
Stage 1	880	-	-	-	-	-
Stage 2	736	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	10.1	5.7		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1530	-	861	-	-	
HCM Lane V/C Ratio	0.087	-	0.181	-	-	
HCM Control Delay (s)	7.6	-	10.1	-	-	
HCM Lane LOS	A	-	B	-	-	
HCM 95th %tile Q(veh)	0.3	-	0.7	-	-	

HCM 6th TWSC  
7: Chestnut St & W 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour



















Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	120	5	5	110	5	5	30	5	5	40	20
Future Vol, veh/h	5	120	5	5	110	5	5	30	5	5	40	20
Conflicting Peds, #/hr	2	0	2	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	133	6	6	122	6	6	33	6	6	44	22
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	141	0	0	320	292	138	307	292	127
Stage 1	-	-	-	-	-	-	150	150	-	139	139	-
Stage 2	-	-	-	-	-	-	170	142	-	168	153	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1449	-	-	1436	-	-	631	617	908	643	617	921
Stage 1	-	-	-	-	-	-	850	771	-	862	780	-
Stage 2	-	-	-	-	-	-	830	777	-	832	769	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1446	-	-	1433	-	-	576	609	906	607	609	919
Mov Cap-2 Maneuver	-	-	-	-	-	-	576	609	-	607	609	-
Stage 1	-	-	-	-	-	-	845	766	-	857	775	-
Stage 2	-	-	-	-	-	-	760	772	-	788	764	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.3			0.3			11.1			10.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	630	1446	-	-	1433	-	-	679				
HCM Lane V/C Ratio	0.071	0.004	-	-	0.004	-	-	0.106				
HCM Control Delay (s)	11.1	7.5	0	-	7.5	0	-	10.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4				



# HCM 6th Signalized Intersection Summary

## 8: Park Ave & W 16th St/E 16th St





Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	110	180	30	130	30	130	780	60	20	520	20
Future Volume (veh/h)	110	110	180	30	130	30	130	780	60	20	520	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	122	122	170	33	144	3	144	867	66	22	578	22
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	230	181	207	158	519	10	455	1507	115	331	1576	60
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.46	0.46	0.46	0.46	0.46	0.46
Sat Flow, veh/h	358	557	637	166	1595	30	809	3310	252	594	3461	132
Grp Volume(v), veh/h	414	0	0	180	0	0	144	462	471	22	294	306
Grp Sat Flow(s),veh/h/ln	1552	0	0	1791	0	0	809	1763	1799	594	1763	1830
Q Serve(g_s), s	6.9	0.0	0.0	0.0	0.0	0.0	5.8	7.9	7.9	1.2	4.5	4.5
Cycle Q Clear(g_c), s	9.9	0.0	0.0	3.0	0.0	0.0	10.3	7.9	7.9	9.1	4.5	4.5
Prop In Lane	0.29		0.41	0.18		0.02	1.00		0.14	1.00		0.07
Lane Grp Cap(c), veh/h	619	0	0	687	0	0	455	803	819	331	803	833
V/C Ratio(X)	0.67	0.00	0.00	0.26	0.00	0.00	0.32	0.58	0.58	0.07	0.37	0.37
Avail Cap(c_a), veh/h	788	0	0	871	0	0	540	987	1008	393	987	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	0.0	0.0	10.3	0.0	0.0	10.7	8.3	8.3	11.6	7.3	7.3
Incr Delay (d2), s/veh	0.7	0.0	0.0	0.1	0.0	0.0	0.6	0.9	0.9	0.1	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	0.0	0.0	1.0	0.0	0.0	0.9	2.3	2.3	0.1	1.3	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.3	0.0	0.0	10.4	0.0	0.0	11.2	9.2	9.2	11.7	7.7	7.7
LnGrp LOS	B	A	A	B	A	A	B	A	A	B	A	A
Approach Vol, veh/h		414			180			1077			622	
Approach Delay, s/veh		13.3			10.4			9.5			7.8	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		23.7		17.4		23.7		17.4				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		12.3		11.9		11.1		5.0				
Green Ext Time (p_c), s		6.4		1.1		4.0		0.5				
Intersection Summary												
HCM 6th Ctrl Delay			9.8									
HCM 6th LOS			A									

Intersection




Intersection Delay, s/veh 11.5

Intersection LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	390	5	5	250	10	5	10	20	10	5	5
Future Vol, veh/h	5	390	5	5	250	10	5	10	20	10	5	5
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	6	433	6	6	278	11	6	11	22	11	6	6
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0







Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12.7	10.3	8.7	8.8
HCM LOS	B	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	14%	1%	2%	50%
Vol Thru, %	29%	97%	94%	25%
Vol Right, %	57%	1%	4%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	400	265	20
LT Vol	5	5	5	10
Through Vol	10	390	250	5
RT Vol	20	5	10	5
Lane Flow Rate	39	444	294	22
Geometry Grp	1	1	1	1
Degree of Util (X)	0.057	0.546	0.373	0.034
Departure Headway (Hd)	5.284	4.424	4.558	5.581
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	674	818	789	638
Service Time	3.342	2.449	2.587	3.643
HCM Lane V/C Ratio	0.058	0.543	0.373	0.034
HCM Control Delay	8.7	12.7	10.3	8.8
HCM Lane LOS	A	B	B	A
HCM 95th-tile Q	0.2	3.4	1.7	0.1

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	330	230	30	20	10
Future Vol, veh/h	10	330	230	30	20	10
Conflicting Peds, #/hr	4	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	11	367	256	33	22	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	293	0	-	0	666	277
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	389	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1263	-	-	-	423	759
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1258	-	-	-	415	756
Mov Cap-2 Maneuver	-	-	-	-	415	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	680	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.2	0		12.9		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	1258	-	-	-	488	
HCM Lane V/C Ratio	0.009	-	-	-	0.068	
HCM Control Delay (s)	7.9	0	-	-	12.9	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0	-	-	-	0.2	

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	5	130	5	5	5	65	930	5	5	620	30
Future Vol, veh/h	20	5	130	5	5	5	65	930	5	5	620	30
Conflicting Peds, #/hr	7	0	7	5	0	5	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	6	144	6	6	6	72	1033	6	6	689	33
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1399	1921	378	1557	1934	537	732	0	0	1049	0	0
Stage 1	728	728	-	1190	1190	-	-	-	-	-	-	-
Stage 2	671	1193	-	367	744	-	-	-	-	-	-	-
Critical Hdwy	7.56	6.56	6.96	7.56	6.56	6.96	4.16	-	-	4.16	-	-
Critical Hdwy Stg 1	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.56	5.56	-	6.56	5.56	-	-	-	-	-	-	-
Follow-up Hdwy	3.53	4.03	3.33	3.53	4.03	3.33	2.23	-	-	2.23	-	-
Pot Cap-1 Maneuver	99	66	617	76	64	486	862	-	-	653	-	-
Stage 1	379	424	-	198	257	-	-	-	-	-	-	-
Stage 2	410	256	-	622	417	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	83	59	607	49	57	478	854	-	-	647	-	-
Mov Cap-2 Maneuver	83	59	-	49	57	-	-	-	-	-	-	-
Stage 1	344	416	-	180	233	-	-	-	-	-	-	-
Stage 2	360	232	-	460	409	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	34.7		66.2		0.6		0.1					
HCM LOS	D		F									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	854	-	-	287	75	647	-	-				
HCM Lane V/C Ratio	0.085	-	-	0.6	0.222	0.009	-	-				
HCM Control Delay (s)	9.6	-	-	34.7	66.2	10.6	-	-				
HCM Lane LOS	A	-	-	D	F	B	-	-				
HCM 95th %tile Q(veh)	0.3	-	-	3.6	0.8	0	-	-				





HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	9.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	160	20	5	75	5	5	10	5	5	5	5
Future Vol, veh/h	25	160	20	5	75	5	5	10	5	5	5	5
Conflicting Peds, #/hr	7	0	2	1	0	6	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	28	178	22	6	83	6	6	11	6	6	6	6
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	104	60	16	154	60	26	17	0	0	22	0	0
Stage 1	26	26	-	31	31	-	-	-	-	-	-	-
Stage 2	78	34	-	123	29	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	874	829	1060	811	829	1047	1594	-	-	1587	-	-
Stage 1	989	872	-	983	867	-	-	-	-	-	-	-
Stage 2	928	865	-	879	869	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	787	814	1053	652	814	1035	1586	-	-	1579	-	-
Mov Cap-2 Maneuver	787	814	-	652	814	-	-	-	-	-	-	-
Stage 1	980	864	-	974	859	-	-	-	-	-	-	-
Stage 2	825	857	-	679	861	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11		10			1.8			2.4			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1586	-	-	829	812	1579	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.275	0.116	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	11	10	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.1	0.4	0	-	-				

HCM 6th TWSC  
13: Normal Ave & W 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour













Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	185	20	5	75	5	0	20	5	5	20	5
Future Vol, veh/h	30	185	20	5	75	5	0	20	5	5	20	5
Conflicting Peds, #/hr	2	0	2	1	0	1	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	33	206	22	6	83	6	0	22	6	6	22	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	91	0	0	230	0	0	397	388	219	397	396	88
Stage 1	-	-	-	-	-	-	285	285	-	100	100	-
Stage 2	-	-	-	-	-	-	112	103	-	297	296	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	1498	-	-	1332	-	-	561	545	818	561	540	968
Stage 1	-	-	-	-	-	-	720	674	-	904	810	-
Stage 2	-	-	-	-	-	-	891	808	-	709	666	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1495	-	-	1329	-	-	526	526	816	526	522	966
Mov Cap-2 Maneuver	-	-	-	-	-	-	526	526	-	526	522	-
Stage 1	-	-	-	-	-	-	701	656	-	880	804	-
Stage 2	-	-	-	-	-	-	857	802	-	663	648	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1			0.5			11.7			11.8		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	566	1495	-	-	1329	-	-	566				
HCM Lane V/C Ratio	0.049	0.022	-	-	0.004	-	-	0.059				
HCM Control Delay (s)	11.7	7.5	0	-	7.7	0	-	11.8				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2				

# HCM 6th Signalized Intersection Summary

14a: Park Ave & E 20th St

Chico Barber Yard SP

Cumulative Plus Project Conditions - AM Peak Hour





						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	130	360	625	70	280	510
Future Volume (veh/h)	130	360	625	70	280	510
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	144	198	694	24	311	567
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	486	569	1176	507	389	2298
Arrive On Green	0.14	0.14	0.33	0.33	0.22	0.65
Sat Flow, veh/h	3428	1572	3618	1521	1767	3618
Grp Volume(v), veh/h	144	198	694	24	311	567
Grp Sat Flow(s),veh/h/ln	1714	1572	1763	1521	1767	1763
Q Serve(g_s), s	1.9	4.7	8.3	0.5	8.5	3.4
Cycle Q Clear(g_c), s	1.9	4.7	8.3	0.5	8.5	3.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	486	569	1176	507	389	2298
V/C Ratio(X)	0.30	0.35	0.59	0.05	0.80	0.25
Avail Cap(c_a), veh/h	1751	1149	2112	911	972	4433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	11.9	14.1	11.5	18.8	3.7
Incr Delay (d2), s/veh	0.1	0.1	0.7	0.1	3.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	2.7	0.2	3.5	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	19.7	12.0	14.7	11.5	22.6	3.7
LnGrp LOS	B	B	B	B	C	A
Approach Vol, veh/h	342		718			878
Approach Delay, s/veh	15.2		14.6			10.4
Approach LOS	B		B			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	38.7		16.2		22.5	12.2
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 64		28.0		30.5	26.0
Max Q Clear Time (g_c+I1), s	5.4		10.5		10.3	6.7
Green Ext Time (p_c), s	4.5		0.9		6.2	0.6
Intersection Summary						
HCM 6th Ctrl Delay			12.8			
HCM 6th LOS			B			
Notes						

Intersection						
Int Delay, s/veh	1.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	210	0	695	600	40
Future Vol, veh/h	0	210	0	695	600	40
Conflicting Peds, #/hr	2	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	0	233	0	772	667	44
Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	-	358	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	636	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	635	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB	SB			
HCM Control Delay, s	13.9	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR		
Capacity (veh/h)	-	635	-	-		
HCM Lane V/C Ratio	-	0.367	-	-		
HCM Control Delay (s)	-	13.9	-	-		
HCM Lane LOS	-	B	-	-		
HCM 95th %tile Q(veh)	-	1.7	-	-		





















HCM 6th TWSC  
15: Normal Ave & W 20th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection												
Int Delay, s/veh	9.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	200	0	5	30	5	0	10	5	15	15	10
Future Vol, veh/h	20	200	0	5	30	5	0	10	5	15	15	10
Conflicting Peds, #/hr	2	0	2	1	0	1	0	0	5	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	22	222	0	6	33	6	0	11	6	17	17	11
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	93	79	25	189	81	21	28	0	0	22	0	0
Stage 1	57	57	-	19	19	-	-	-	-	-	-	-
Stage 2	36	22	-	170	62	-	-	-	-	-	-	-
Critical Hdwy	7.13	6.53	6.23	7.13	6.53	6.23	4.13	-	-	4.13	-	-
Critical Hdwy Stg 1	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.13	5.53	-	6.13	5.53	-	-	-	-	-	-	-
Follow-up Hdwy	3.527	4.027	3.327	3.527	4.027	3.327	2.227	-	-	2.227	-	-
Pot Cap-1 Maneuver	888	809	1048	769	807	1054	1579	-	-	1587	-	-
Stage 1	952	845	-	997	878	-	-	-	-	-	-	-
Stage 2	977	875	-	830	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	846	796	1046	594	794	1047	1579	-	-	1579	-	-
Mov Cap-2 Maneuver	846	796	-	594	794	-	-	-	-	-	-	-
Stage 1	952	836	-	992	874	-	-	-	-	-	-	-
Stage 2	933	871	-	602	832	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11.5		9.9			0			2.7			
HCM LOS	B		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1579	-	-	800	785	1579	-	-				
HCM Lane V/C Ratio	-	-	-	0.306	0.057	0.011	-	-				
HCM Control Delay (s)	0	-	-	11.5	9.9	7.3	0	-				
HCM Lane LOS	A	-	-	B	A	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	1.3	0.2	0	-	-				

# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	5	100	5	5	10	115	645	10	20	780	20
Future Volume (veh/h)	40	5	100	5	5	10	115	645	10	20	780	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.99	1.00		1.00	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	44	6	100	6	6	4	128	717	0	22	867	19
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	136	23	137	147	119	57	508	2439	0	587	2439	53
Arrive On Green	0.13	0.13	0.13	0.13	0.13	0.13	0.69	0.69	0.00	0.69	0.69	0.69
Sat Flow, veh/h	342	175	1034	382	901	427	622	3618	0	728	3525	77
Grp Volume(v), veh/h	150	0	0	16	0	0	128	717	0	22	434	452
Grp Sat Flow(s),veh/h/ln	1551	0	0	1710	0	0	622	1763	0	728	1763	1839
Q Serve(g_s), s	3.1	0.0	0.0	0.0	0.0	0.0	5.4	4.0	0.0	0.6	5.2	5.2
Cycle Q Clear(g_c), s	4.7	0.0	0.0	0.4	0.0	0.0	10.6	4.0	0.0	4.7	5.2	5.2
Prop In Lane	0.29		0.67	0.37		0.25	1.00		0.00	1.00		0.04
Lane Grp Cap(c), veh/h	296	0	0	323	0	0	508	2439	0	587	1220	1273
V/C Ratio(X)	0.51	0.00	0.00	0.05	0.00	0.00	0.25	0.29	0.00	0.04	0.36	0.36
Avail Cap(c_a), veh/h	554	0	0	581	0	0	508	2439	0	587	1220	1273
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	0.0	19.5	0.0	0.0	5.4	3.1	0.0	4.0	3.2	3.2
Incr Delay (d2), s/veh	1.3	0.0	0.0	0.1	0.0	0.0	1.2	0.3	0.0	0.1	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.0	0.2	0.0	0.0	0.6	0.6	0.0	0.1	0.9	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.6	0.0	0.0	19.5	0.0	0.0	6.6	3.4	0.0	4.1	4.0	4.0
LnGrp LOS	C	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h	150		16				845				908	
Approach Delay, s/veh	22.6		19.5				3.9				4.0	
Approach LOS	C		B				A				A	
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	40.0		11.3		40.0		11.3					
Change Period (Y+Rc), s	4.5		4.5		4.5		4.5					
Max Green Setting (Gmax), s	35.5		15.5		35.5		15.5					
Max Q Clear Time (g_c+I1), s	12.6		6.7		7.2		2.4					
Green Ext Time (p_c), s	6.1		0.5		6.0		0.0					
Intersection Summary												
HCM 6th Ctrl Delay			5.5									
HCM 6th LOS			A									

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

Intersection

Int Delay, s/veh 4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	90	0	5	120	15	5
Future Vol, veh/h	90	0	5	120	15	5
Conflicting Peds, #/hr	0	0	0	0	5	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	100	0	6	133	17	6

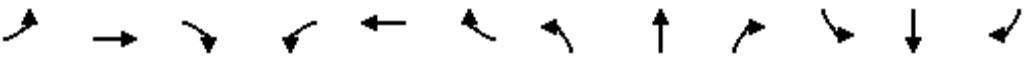
Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	118	78	0
Stage 1	78	-	-
Stage 2	40	-	-
Critical Hdwy	6.43	6.23	-
Critical Hdwy Stg 1	5.43	-	-
Critical Hdwy Stg 2	5.43	-	-
Follow-up Hdwy	3.527	3.327	-
Pot Cap-1 Maneuver	875	980	-
Stage 1	943	-	-
Stage 2	980	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	860	975	-
Mov Cap-2 Maneuver	860	-	-
Stage 1	938	-	-
Stage 2	968	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	5.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	860	1425
HCM Lane V/C Ratio	-	-	0.116	0.012
HCM Control Delay (s)	-	-	9.7	7.6
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0

# HCM 6th Signalized Intersection Summary 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔	↔		↔	↔	↔	↔	
Traffic Volume (veh/h)	30	20	0	370	90	490	0	320	490	600	300	70
Future Volume (veh/h)	30	20	0	370	90	490	0	320	490	600	300	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841	1841
Adj Flow Rate, veh/h	33	22	0	256	318	0	0	356	0	534	519	68
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	4	4	4	4	4	4	4	4	4	4	4	4
Cap, veh/h	61	40	0	332	349		0	399		572	520	68
Arrive On Green	0.06	0.06	0.00	0.19	0.19	0.00	0.00	0.22	0.00	0.33	0.33	0.33
Sat Flow, veh/h	1072	715	0	1753	1841	1560	0	1841	1560	1753	1593	209
Grp Volume(v), veh/h	55	0	0	256	318	0	0	356	0	534	0	587
Grp Sat Flow(s),veh/h/ln	1787	0	0	1753	1841	1560	0	1841	1560	1753	0	1802
Q Serve(g_s), s	2.8	0.0	0.0	13.2	16.1	0.0	0.0	17.8	0.0	28.0	0.0	30.9
Cycle Q Clear(g_c), s	2.8	0.0	0.0	13.2	16.1	0.0	0.0	17.8	0.0	28.0	0.0	30.9
Prop In Lane	0.60		0.00	1.00		1.00	0.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	101	0	0	332	349		0	399		572	0	588
V/C Ratio(X)	0.55	0.00	0.00	0.77	0.91		0.00	0.89		0.93	0.00	1.00
Avail Cap(c_a), veh/h	226	0	0	332	349		0	465		572	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	0.0	36.5	37.7	0.0	0.0	36.1	0.0	31.0	0.0	31.9
Incr Delay (d2), s/veh	4.5	0.0	0.0	10.5	27.2	0.0	0.0	17.3	0.0	22.5	0.0	36.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.0	6.4	9.6	0.0	0.0	9.7	0.0	14.6	0.0	18.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.1	0.0	0.0	47.1	64.9	0.0	0.0	53.4	0.0	53.4	0.0	68.4
LnGrp LOS	D	A	A	D	E		A	D		D	A	E
Approach Vol, veh/h	55			574			356			1121		
Approach Delay, s/veh	48.1			56.9			53.4			61.3		
Approach LOS	D			E			D			E		
Timer - Assigned Phs	2			4			6			8		
Phs Duration (G+Y+Rc), s	25.6			23.0			36.0			10.4		
Change Period (Y+Rc), s	5.0			5.0			5.0			5.0		
Max Green Setting (Gmax), s	24.0			18.0			31.0			12.0		
Max Q Clear Time (g_c+I1), s	19.8			18.1			32.9			4.8		
Green Ext Time (p_c), s	0.8			0.0			0.0			0.1		

## Intersection Summary

HCM 6th Ctrl Delay 58.4  
HCM 6th LOS E

## Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	580	50	180	640	0	0	0	0	580	0	330
Future Volume (veh/h)	0	580	50	180	640	0	0	0	0	580	0	330
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1856	1856	1856	1856	0				1856	1856	1856
Adj Flow Rate, veh/h	0	644	9	200	711	0				644	0	77
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	917	400	554	1873	0				805	0	716
Arrive On Green	0.00	0.26	0.26	0.16	0.53	0.00				0.23	0.00	0.23
Sat Flow, veh/h	0	3618	1538	3428	3618	0				3534	0	3145
Grp Volume(v), veh/h	0	644	9	200	711	0				644	0	77
Grp Sat Flow(s),veh/h/ln	0	1763	1538	1714	1763	0				1767	0	1572
Q Serve(g_s), s	0.0	7.5	0.2	2.4	5.4	0.0				7.8	0.0	0.9
Cycle Q Clear(g_c), s	0.0	7.5	0.2	2.4	5.4	0.0				7.8	0.0	0.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	917	400	554	1873	0				805	0	716
V/C Ratio(X)	0.00	0.70	0.02	0.36	0.38	0.00				0.80	0.00	0.11
Avail Cap(c_a), veh/h	0	2242	978	1503	4174	0				1937	0	1724
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.3	12.6	17.0	6.3	0.0				16.6	0.0	13.9
Incr Delay (d2), s/veh	0.0	0.4	0.0	0.1	0.0	0.0				0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	0.1	0.8	1.4	0.0				2.8	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	12.6	17.2	6.3	0.0				17.3	0.0	14.0
LnGrp LOS	A	B	B	B	A	A				B	A	B
Approach Vol, veh/h		653			911						721	
Approach Delay, s/veh		15.6			8.7						17.0	
Approach LOS		B			A						B	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	12.4	17.9		15.4		30.2						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	14.4	9.5		9.8		7.4						
Green Ext Time (p_c), s	0.1	1.7		0.5		2.0						

## Intersection Summary

HCM 6th Ctrl Delay	13.3
HCM 6th LOS	B

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑			↑↑	↰	↰	↰	↰			
Traffic Volume (veh/h)	180	980	0	0	770	380	50	0	200	0	0	0
Future Volume (veh/h)	180	980	0	0	770	380	50	0	200	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1856	1856	0	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	200	1089	0	0	856	8	56	0	128			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	556	2111	0	0	1151	503	562	0	250			
Arrive On Green	0.16	0.60	0.00	0.00	0.33	0.33	0.16	0.00	0.16			
Sat Flow, veh/h	3428	3618	0	0	3618	1541	3534	0	1572			
Grp Volume(v), veh/h	200	1089	0	0	856	8	56	0	128			
Grp Sat Flow(s), veh/h/ln	1714	1763	0	0	1763	1541	1767	0	1572			
Q Serve(g_s), s	2.4	8.1	0.0	0.0	9.8	0.2	0.6	0.0	3.4			
Cycle Q Clear(g_c), s	2.4	8.1	0.0	0.0	9.8	0.2	0.6	0.0	3.4			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	556	2111	0	0	1151	503	562	0	250			
V/C Ratio(X)	0.36	0.52	0.00	0.00	0.74	0.02	0.10	0.00	0.51			
Avail Cap(c_a), veh/h	1511	4194	0	0	2252	985	1947	0	866			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	16.9	5.3	0.0	0.0	13.6	10.3	16.3	0.0	17.5			
Incr Delay (d2), s/veh	0.1	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.8	1.7	0.0	0.0	3.2	0.0	0.2	0.0	1.1			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.1	5.4	0.0	0.0	14.0	10.4	16.3	0.0	18.1			
LnGrp LOS	B	A	A	A	B	B	B	A	B			
Approach Vol, veh/h	1289			864			184					
Approach Delay, s/veh	7.2			13.9			17.6					
Approach LOS	A			B			B					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	33.2			12.4			20.8			12.2		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	10.1			4.4			11.8			5.4		
Green Ext Time (p_c), s	3.4			0.3			2.3			0.3		

## Intersection Summary

HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B




## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.




HCM 6th TWSC  
1a: Park Ave & W 11th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	1.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	70	50	750	750	30
Future Vol, veh/h	20	70	50	750	750	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	78	56	833	833	33
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1379	433	866	0	-	0
Stage 1	850	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	136	571	773	-	-	-
Stage 1	379	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	118	571	773	-	-	-
Mov Cap-2 Maneuver	118	-	-	-	-	-
Stage 1	328	-	-	-	-	-
Stage 2	555	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	22.2	0.6		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	773	-	308	-	-	
HCM Lane V/C Ratio	0.072	-	0.325	-	-	
HCM Control Delay (s)	10	-	22.2	-	-	
HCM Lane LOS	B	-	C	-	-	
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-	

HCM 6th TWSC  
1b: Park Ave & E 11th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	20	780	10	10	800
Future Vol, veh/h	5	20	780	10	10	800
Conflicting Peds, #/hr	5	0	0	5	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	22	867	11	11	889
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1355	449	0	0	888	0
Stage 1	883	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.84	6.94	-	-	4.14	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	-	-	2.22	-
Pot Cap-1 Maneuver	141	557	-	-	758	-
Stage 1	365	-	-	-	-	-
Stage 2	594	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	135	552	-	-	751	-
Mov Cap-2 Maneuver	259	-	-	-	-	-
Stage 1	361	-	-	-	-	-
Stage 2	574	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	13.5	0		0.1		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	450	751	-	
HCM Lane V/C Ratio	-	-	0.062	0.015	-	
HCM Control Delay (s)	-	-	13.5	9.9	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

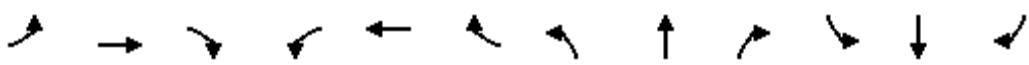


# HCM 6th Signalized Intersection Summary

## 2: Ivy St & W 8th St

Chico Barber Yard SP

Cumulative Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↑↑			↑			↑	
Traffic Volume (veh/h)	0	0	0	180	810	100	160	140	0	0	360	20
Future Volume (veh/h)	0	0	0	180	810	100	160	140	0	0	360	20
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.99	0.98		1.00	1.00		0.90
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach				No			No				No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	1870	1870	0	0	1870	1870
Adj Flow Rate, veh/h				200	900	89	178	156	0	0	400	14
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				236	1119	116	264	193	0	0	668	23
Arrive On Green				0.40	0.40	0.40	0.37	0.37	0.00	0.00	0.37	0.37
Sat Flow, veh/h				588	2782	287	340	516	0	0	1788	63
Grp Volume(v), veh/h				626	0	563	334	0	0	0	0	414
Grp Sat Flow(s),veh/h/ln				1841	0	1817	855	0	0	0	0	1851
Q Serve(g_s), s				12.4	0.0	10.8	7.8	0.0	0.0	0.0	0.0	7.2
Cycle Q Clear(g_c), s				12.4	0.0	10.8	15.0	0.0	0.0	0.0	0.0	7.2
Prop In Lane				0.32		0.16	0.53		0.00	0.00		0.03
Lane Grp Cap(c), veh/h				741	0	731	457	0	0	0	0	691
V/C Ratio(X)				0.85	0.00	0.77	0.73	0.00	0.00	0.00	0.00	0.60
Avail Cap(c_a), veh/h				1146	0	1131	457	0	0	0	0	691
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				10.9	0.0	10.4	13.9	0.0	0.0	0.0	0.0	10.1
Incr Delay (d2), s/veh				2.1	0.0	0.7	5.2	0.0	0.0	0.0	0.0	1.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.0	0.0	3.2	3.1	0.0	0.0	0.0	0.0	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				13.0	0.0	11.0	19.0	0.0	0.0	0.0	0.0	11.2
LnGrp LOS				B	A	B	B	A	A	A	A	B
Approach Vol, veh/h					1189			334			414	
Approach Delay, s/veh					12.1			19.0			11.2	
Approach LOS					B			B			B	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		21.2		19.0				19.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		14.4		9.2				17.0				
Green Ext Time (p_c), s		1.7		0.5				0.0				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				13.1								
HCM 6th LOS				B								
<b>Notes</b>												
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.												

# HCM 6th Signalized Intersection Summary

## 3: Ivy St & W 9th St

Chico Barber Yard SP

Cumulative Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑						↑			↑	
Traffic Volume (veh/h)	20	850	200	0	0	0	0	280	100	170	380	0
Future Volume (veh/h)	20	850	200	0	0	0	0	280	100	170	380	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97				1.00		0.95	0.99		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No						No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	22	944	211				0	311	111	189	422	0
Peak Hour Factor	0.90	0.90	0.90				0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	26	1152	273				0	483	172	195	257	0
Arrive On Green	0.40	0.40	0.40				0.00	0.37	0.37	0.37	0.37	0.00
Sat Flow, veh/h	64	2851	676				0	1296	463	209	689	0
Grp Volume(v), veh/h	639	0	538				0	0	422	611	0	0
Grp Sat Flow(s),veh/h/ln	1867	0	1724				0	0	1758	898	0	0
Q Serve(g_s), s	12.5	0.0	10.9				0.0	0.0	8.0	7.0	0.0	0.0
Cycle Q Clear(g_c), s	12.5	0.0	10.9				0.0	0.0	8.0	15.0	0.0	0.0
Prop In Lane	0.03		0.39				0.00		0.26	0.31		0.00
Lane Grp Cap(c), veh/h	754	0	696				0	0	655	451	0	0
V/C Ratio(X)	0.85	0.00	0.77				0.00	0.00	0.64	1.35	0.00	0.00
Avail Cap(c_a), veh/h	1159	0	1070				0	0	655	451	0	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	10.9	0.0	10.4				0.0	0.0	10.4	15.6	0.0	0.0
Incr Delay (d2), s/veh	2.2	0.0	0.7				0.0	0.0	1.7	173.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	3.1				0.0	0.0	2.6	25.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	11.1				0.0	0.0	12.1	188.8	0.0	0.0
LnGrp LOS	B	A	B				A	A	B	F	A	A
Approach Vol, veh/h		1177						422			611	
Approach Delay, s/veh		12.2						12.1			188.8	
Approach LOS		B						B			F	
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		21.3		19.0				19.0				
Change Period (Y+Rc), s		* 5		* 4				* 4				
Max Green Setting (Gmax), s		* 25		* 15				* 15				
Max Q Clear Time (g_c+I1), s		14.5		17.0				10.0				
Green Ext Time (p_c), s		1.7		0.0				0.5				

### Intersection Summary

HCM 6th Ctrl Delay 61.0

HCM 6th LOS E

### Notes

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th TWSC  
4: Ivy St & W 12th St



















Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	1.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	40	5	5	5	5	10	5	280	5	10	470	70
Future Vol, veh/h	40	5	5	5	5	10	5	280	5	10	470	70
Conflicting Peds, #/hr	5	0	5	5	0	5	30	0	25	35	0	40
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	6	6	6	6	11	6	311	6	11	522	78
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	963	987	606	955	1023	354	640	0	0	352	0	0
Stage 1	623	623	-	361	361	-	-	-	-	-	-	-
Stage 2	340	364	-	594	662	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	235	247	497	238	236	690	944	-	-	1207	-	-
Stage 1	474	478	-	657	626	-	-	-	-	-	-	-
Stage 2	675	624	-	491	459	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	213	225	476	218	215	664	908	-	-	1167	-	-
Mov Cap-2 Maneuver	213	225	-	218	215	-	-	-	-	-	-	-
Stage 1	452	454	-	630	600	-	-	-	-	-	-	-
Stage 2	649	598	-	470	436	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	25.9		16.8		0.2		0.1					
HCM LOS	D		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	908	-	-	227	327	1167	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.245	0.068	0.01	-	-				
HCM Control Delay (s)	9	0	-	25.9	16.8	8.1	0	-				
HCM Lane LOS	A	A	-	D	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	0.2	0	-	-				

# HCM 6th Signalized Intersection Summary




## 5: Park Ave & W 14th St/E 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	140	140	20	170	20	190	710	20	5	750	10
Future Volume (veh/h)	20	140	140	20	170	20	190	710	20	5	750	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	156	135	22	189	1	211	789	22	6	833	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	107	227	183	119	434	2	427	1876	52	439	1911	23
Arrive On Green	0.25	0.25	0.25	0.25	0.25	0.25	0.53	0.53	0.53	0.53	0.53	0.53
Sat Flow, veh/h	58	900	726	91	1724	9	651	3527	98	671	3595	43
Grp Volume(v), veh/h	313	0	0	212	0	0	211	397	414	6	412	431
Grp Sat Flow(s),veh/h/ln	1684	0	0	1824	0	0	651	1777	1849	671	1777	1861
Q Serve(g_s), s	1.7	0.0	0.0	0.0	0.0	0.0	12.2	5.6	5.6	0.2	5.9	5.9
Cycle Q Clear(g_c), s	7.0	0.0	0.0	4.0	0.0	0.0	18.0	5.6	5.6	5.8	5.9	5.9
Prop In Lane	0.07		0.43	0.10		0.00	1.00		0.05	1.00		0.02
Lane Grp Cap(c), veh/h	517	0	0	555	0	0	427	945	983	439	945	990
V/C Ratio(X)	0.61	0.00	0.00	0.38	0.00	0.00	0.49	0.42	0.42	0.01	0.44	0.44
Avail Cap(c_a), veh/h	816	0	0	869	0	0	441	982	1022	453	982	1029
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.2	0.0	0.0	13.1	0.0	0.0	11.4	5.9	5.9	7.6	5.9	5.9
Incr Delay (d2), s/veh	0.4	0.0	0.0	0.2	0.0	0.0	1.3	0.4	0.4	0.0	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	0.0	1.5	0.0	0.0	1.4	1.4	1.5	0.0	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	14.7	0.0	0.0	13.3	0.0	0.0	12.7	6.3	6.3	7.7	6.4	6.4
LnGrp LOS	B	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h	313		212				1022				849	
Approach Delay, s/veh	14.7		13.3				7.6				6.4	
Approach LOS	B		B				A				A	
Timer - Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	27.1		14.5		27.1		14.5					
Change Period (Y+Rc), s	5.0		4.0		5.0		4.0					
Max Green Setting (Gmax), s	23.0		18.0		23.0		18.0					
Max Q Clear Time (g_c+I1), s	20.0		9.0		7.9		6.0					
Green Ext Time (p_c), s	2.1		0.9		6.4		0.6					
Intersection Summary												
HCM 6th Ctrl Delay			8.6									
HCM 6th LOS			A									




HCM 6th TWSC  
6a: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	350	30	10	260	30
Future Vol, veh/h	10	350	30	10	260	30
Conflicting Peds, #/hr	12	2	0	10	10	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	389	33	11	289	33
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	672	51	0	0	54	0
Stage 1	49	-	-	-	-	-
Stage 2	623	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	421	1017	-	-	1551	-
Stage 1	973	-	-	-	-	-
Stage 2	535	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	333	1005	-	-	1536	-
Mov Cap-2 Maneuver	333	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	427	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	11.5	0	7.1			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	952	1536	-	
HCM Lane V/C Ratio	-	-	0.42	0.188	-	
HCM Control Delay (s)	-	-	11.5	7.9	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	2.1	0.7	-	

HCM 6th TWSC  
6b: Broadway St & W 14th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection						
Int Delay, s/veh	10.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	260	350	30	30	20
Future Vol, veh/h	50	260	350	30	30	20
Conflicting Peds, #/hr	2	12	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	56	289	389	33	33	22
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	867	66	65	0	-	0
Stage 1	54	-	-	-	-	-
Stage 2	813	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	323	998	1537	-	-	-
Stage 1	969	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	234	977	1522	-	-	-
Mov Cap-2 Maneuver	234	-	-	-	-	-
Stage 1	710	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	16.8	7.5		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	1522	-	646	-	-	
HCM Lane V/C Ratio	0.256	-	0.533	-	-	
HCM Control Delay (s)	8.2	-	16.8	-	-	
HCM Lane LOS	A	-	C	-	-	
HCM 95th %tile Q(veh)	1	-	3.2	-	-	

HCM 6th TWSC  
7: Chestnut St & W 14th St



















Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	12.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	280	5	5	340	5	5	30	10	5	30	40
Future Vol, veh/h	5	280	5	5	340	5	5	30	10	5	30	40
Conflicting Peds, #/hr	2	0	2	7	0	2	0	0	5	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	311	6	6	378	6	6	33	11	6	33	44
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	312	128	62	289	145	46	77	0	0	49	0	0
Stage 1	67	67	-	56	56	-	-	-	-	-	-	-
Stage 2	245	61	-	233	89	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	641	763	1003	663	746	1023	1522	-	-	1558	-	-
Stage 1	943	839	-	956	848	-	-	-	-	-	-	-
Stage 2	759	844	-	770	821	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	377	753	996	439	736	1016	1522	-	-	1551	-	-
Mov Cap-2 Maneuver	377	753	-	439	736	-	-	-	-	-	-	-
Stage 1	939	836	-	947	840	-	-	-	-	-	-	-
Stage 2	413	836	-	476	818	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	13.5		15.4		0.8		0.5					
HCM LOS	B		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	1522	-	-	743	732	1551	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.434	0.531	0.004	-	-				
HCM Control Delay (s)	7.4	0	-	13.5	15.4	7.3	0	-				
HCM Lane LOS	A	A	-	B	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	2.2	3.2	0	-	-				

# HCM 6th Signalized Intersection Summary

## 8: Park Ave & W 16th St/E 16th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	110	160	180	60	210	20	370	790	60	10	840	30
Future Volume (veh/h)	110	160	180	60	210	20	370	790	60	10	840	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		1.00	1.00		0.97	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	122	178	160	67	233	2	411	878	67	11	933	32
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	233	184	171	467	4	324	1616	123	329	1697	58
Arrive On Green	0.33	0.33	0.33	0.33	0.33	0.33	0.48	0.48	0.48	0.48	0.48	0.48
Sat Flow, veh/h	346	714	565	240	1432	11	581	3336	255	592	3504	120
Grp Volume(v), veh/h	460	0	0	302	0	0	411	468	477	11	473	492
Grp Sat Flow(s),veh/h/ln	1626	0	0	1683	0	0	581	1777	1814	592	1777	1847
Q Serve(g_s), s	5.9	0.0	0.0	0.0	0.0	0.0	14.1	8.7	8.7	0.6	8.9	8.9
Cycle Q Clear(g_c), s	12.3	0.0	0.0	6.4	0.0	0.0	23.0	8.7	8.7	9.4	8.9	8.9
Prop In Lane	0.27		0.35	0.22		0.01	1.00		0.14	1.00		0.07
Lane Grp Cap(c), veh/h	626	0	0	641	0	0	324	861	879	329	861	895
V/C Ratio(X)	0.73	0.00	0.00	0.47	0.00	0.00	1.27	0.54	0.54	0.03	0.55	0.55
Avail Cap(c_a), veh/h	706	0	0	726	0	0	324	861	879	329	861	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.7	0.0	0.0	12.9	0.0	0.0	20.0	8.6	8.6	11.8	8.6	8.6
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.2	0.0	0.0	142.3	0.9	0.9	0.1	1.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	0.0	0.0	2.3	0.0	0.0	16.2	2.7	2.8	0.1	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.5	0.0	0.0	13.1	0.0	0.0	162.2	9.5	9.5	11.9	9.6	9.5
LnGrp LOS	B	A	A	B	A	A	F	A	A	B	A	A
Approach Vol, veh/h		460			302			1356			976	
Approach Delay, s/veh		17.5			13.1			55.8			9.6	
Approach LOS		B			B			E			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		28.0		19.5		28.0		19.5				
Change Period (Y+Rc), s		5.0		4.0		5.0		4.0				
Max Green Setting (Gmax), s		23.0		18.0		23.0		18.0				
Max Q Clear Time (g_c+I1), s		25.0		14.3		11.4		8.4				
Green Ext Time (p_c), s		0.0		0.8		6.3		0.9				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay				31.3								
HCM 6th LOS				C								







HCM 6th AWSC  
9: Broadway St & W 16th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection




Intersection Delay, s/veh 22.9

Intersection LOS C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	410	5	5	580	10	5	20	5	5	20	10
Future Vol, veh/h	5	410	5	5	580	10	5	20	5	5	20	10
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	456	6	6	644	11	6	22	6	6	22	11
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left SB		NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right NB		SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16	29.2	10	9.9
HCM LOS	C	D	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	17%	1%	1%	14%
Vol Thru, %	67%	98%	97%	57%
Vol Right, %	17%	1%	2%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	420	595	35
LT Vol	5	5	5	5
Through Vol	20	410	580	20
RT Vol	5	5	10	10
Lane Flow Rate	33	467	661	39
Geometry Grp	1	1	1	1
Degree of Util (X)	0.061	0.631	0.858	0.07
Departure Headway (Hd)	6.547	4.868	4.67	6.451
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	550	733	767	558
Service Time	4.551	2.95	2.744	4.455
HCM Lane V/C Ratio	0.06	0.637	0.862	0.07
HCM Control Delay	10	16	29.2	9.9
HCM Lane LOS	A	C	D	A
HCM 95th-tile Q	0.2	4.5	10.3	0.2

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	355	550	40	20	10
Future Vol, veh/h	5	355	550	40	20	10
Conflicting Peds, #/hr	4	0	0	4	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	394	611	44	22	11
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	659	0	-	0	1043	637
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	406	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	929	-	-	-	254	477
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	925	-	-	-	250	475
Mov Cap-2 Maneuver	-	-	-	-	250	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	670	-
Approach	EB	WB		SB		
HCM Control Delay, s	0.1	0		18.6		
HCM LOS				C		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	925	-	-	-	297	
HCM Lane V/C Ratio	0.006	-	-	-	0.112	
HCM Control Delay (s)	8.9	0	-	-	18.6	
HCM Lane LOS	A	A	-	-	C	
HCM 95th %tile Q(veh)	0	-	-	-	0.4	

HCM 6th TWSC  
11: Park Ave & W 18th St/E 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	14.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↙	↕		↙	↕	
Traffic Vol, veh/h	15	5	130	5	5	10	50	1190	5	5	990	80
Future Vol, veh/h	15	5	130	5	5	10	50	1190	5	5	990	80
Conflicting Peds, #/hr	2	0	2	5	0	5	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	75	-	-	75	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	17	6	144	6	6	11	56	1322	6	6	1100	89





Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1948	2617	610	2017	2658	679	1199	0	0	1338	0	0
Stage 1	1167	1167	-	1447	1447	-	-	-	-	-	-	-
Stage 2	781	1450	-	570	1211	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	39	24	437	34	22	394	578	-	-	511	-	-
Stage 1	206	266	-	138	195	-	-	-	-	-	-	-
Stage 2	354	194	-	474	253	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	27	21	431	16	19	388	572	-	-	506	-	-
Mov Cap-2 Maneuver	27	21	-	16	19	-	-	-	-	-	-	-
Stage 1	184	260	-	123	174	-	-	-	-	-	-	-
Stage 2	299	173	-	303	247	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	209.5		236.7		0.5		0.1	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	572	-	-	137 33	506	-	-
HCM Lane V/C Ratio	0.097	-	-	1.217 0.673	0.011	-	-
HCM Control Delay (s)	12	-	-	209.5 236.7	12.2	-	-
HCM Lane LOS	B	-	-	F F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	-	10 2.3	0	-	-





HCM 6th TWSC  
12: Broadway St & W 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	9.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	125	20	5	120	5	5	20	5	5	20	5
Future Vol, veh/h	20	125	20	5	120	5	5	20	5	5	20	5
Conflicting Peds, #/hr	7	0	2	2	0	7	10	0	5	10	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	139	22	6	133	6	6	22	6	6	22	6
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	161	97	37	167	97	42	38	0	0	38	0	0
Stage 1	47	47	-	47	47	-	-	-	-	-	-	-
Stage 2	114	50	-	120	50	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	804	793	1035	797	793	1029	1572	-	-	1572	-	-
Stage 1	967	856	-	967	856	-	-	-	-	-	-	-
Stage 2	891	853	-	884	853	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	678	771	1023	660	771	1012	1557	-	-	1557	-	-
Mov Cap-2 Maneuver	678	771	-	660	771	-	-	-	-	-	-	-
Stage 1	954	844	-	954	844	-	-	-	-	-	-	-
Stage 2	738	841	-	718	841	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	11		10.7			1.2			1.2			
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1557	-	-	781	773	1557	-	-				
HCM Lane V/C Ratio	0.004	-	-	0.235	0.187	0.004	-	-				
HCM Control Delay (s)	7.3	0	-	11	10.7	7.3	0	-				
HCM Lane LOS	A	A	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.9	0.7	0	-	-				













HCM 6th TWSC  
13: Normal Ave & W 18th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	155	20	5	110	5	0	20	5	5	30	5
Future Vol, veh/h	20	155	20	5	110	5	0	20	5	5	30	5
Conflicting Peds, #/hr	2	0	7	7	0	2	5	0	5	5	0	5
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	172	22	6	122	6	0	22	6	6	33	6
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	201	0	0	396	376	195	385	384	132
Stage 1	-	-	-	-	-	-	234	234	-	139	139	-
Stage 2	-	-	-	-	-	-	162	142	-	246	245	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1455	-	-	1371	-	-	564	555	846	573	550	917
Stage 1	-	-	-	-	-	-	769	711	-	864	782	-
Stage 2	-	-	-	-	-	-	840	779	-	758	703	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1452	-	-	1362	-	-	519	538	836	539	533	911
Mov Cap-2 Maneuver	-	-	-	-	-	-	519	538	-	539	533	-
Stage 1	-	-	-	-	-	-	751	694	-	848	777	-
Stage 2	-	-	-	-	-	-	791	774	-	713	686	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.8			0.3			11.5			11.9		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	579	1452	-	-	1362	-	-	563				
HCM Lane V/C Ratio	0.048	0.015	-	-	0.004	-	-	0.079				
HCM Control Delay (s)	11.5	7.5	0	-	7.7	0	-	11.9				
HCM Lane LOS	B	A	A	-	A	A	-	B				
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3				

# HCM 6th Signalized Intersection Summary 14a: Park Ave & E 20th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	220	430	790	150	520	630
Future Volume (veh/h)	220	430	790	150	520	630
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		0.97	1.00	
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	244	182	878	167	578	700
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	368	731	1181	510	632	2679
Arrive On Green	0.11	0.11	0.33	0.33	0.35	0.75
Sat Flow, veh/h	3456	1585	3647	1533	1781	3647
Grp Volume(v), veh/h	244	182	878	167	578	700
Grp Sat Flow(s),veh/h/ln	1728	1585	1777	1533	1781	1777
Q Serve(g_s), s	5.1	5.2	16.4	6.1	23.3	4.5
Cycle Q Clear(g_c), s	5.1	5.2	16.4	6.1	23.3	4.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	368	731	1181	510	632	2679
V/C Ratio(X)	0.66	0.25	0.74	0.33	0.91	0.26
Avail Cap(c_a), veh/h	1197	1111	1420	612	807	3289
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.3	12.3	22.2	18.8	23.1	2.8
Incr Delay (d2), s/veh	0.8	0.1	2.0	0.5	12.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.7	6.5	2.1	10.9	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	33.0	12.4	24.3	19.3	35.9	2.9
LnGrp LOS	C	B	C	B	D	A
Approach Vol, veh/h	426		1045			1278
Approach Delay, s/veh	24.2		23.5			17.8
Approach LOS	C		C			B
Timer - Assigned Phs	2		5		6	8
Phs Duration (G+Y+Rc), s	62.1		31.6		30.5	13.0
Change Period (Y+Rc), s	* 5.5		5.0		5.5	5.0
Max Green Setting (Gmax), s	* 70		34.0		30.0	26.0
Max Q Clear Time (g_c+I1), s	6.5		25.3		18.4	7.2
Green Ext Time (p_c), s	5.2		1.4		6.2	0.7
Intersection Summary						
HCM 6th Ctrl Delay			21.0			
HCM 6th LOS			C			
Notes						

Intersection						
Int Delay, s/veh	0.9					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗		↑↑	↑↑	
Traffic Vol, veh/h	0	120	0	940	680	170
Future Vol, veh/h	0	120	0	940	680	170
Conflicting Peds, #/hr	2	2	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	133	0	1044	756	189
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	-	475	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.94	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.32	-	-	-	-
Pot Cap-1 Maneuver	0	536	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	535	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	13.9	0		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT EBLn1		SBT	SBR		
Capacity (veh/h)	- 535		-	-		
HCM Lane V/C Ratio	- 0.249		-	-		
HCM Control Delay (s)	- 13.9		-	-		
HCM Lane LOS	- B		-	-		
HCM 95th %tile Q(veh)	- 1		-	-		

HCM 6th TWSC  
15: Normal Ave & W 20th St

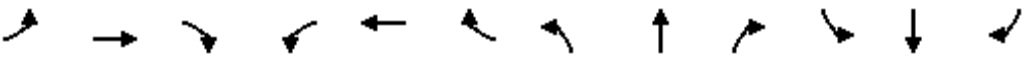
Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection												
Int Delay, s/veh	8.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	100	0	5	130	5	0	20	5	15	15	10
Future Vol, veh/h	5	100	0	5	130	5	0	20	5	15	15	10
Conflicting Peds, #/hr	2	0	2	7	0	7	0	0	0	5	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	111	0	6	144	6	0	22	6	17	17	11
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	164	90	30	149	92	37	28	0	0	33	0	0
Stage 1	57	57	-	30	30	-	-	-	-	-	-	-
Stage 2	107	33	-	119	62	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	801	800	1044	819	798	1035	1585	-	-	1579	-	-
Stage 1	955	847	-	987	870	-	-	-	-	-	-	-
Stage 2	898	868	-	885	843	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	674	787	1037	716	785	1023	1585	-	-	1571	-	-
Mov Cap-2 Maneuver	674	787	-	716	785	-	-	-	-	-	-	-
Stage 1	955	838	-	982	866	-	-	-	-	-	-	-
Stage 2	739	864	-	754	834	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	10.4		10.7		0		2.7					
HCM LOS	B		B									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	1585	-	-	781	789	1571	-	-				
HCM Lane V/C Ratio	-	-	-	0.149	0.197	0.011	-	-				
HCM Control Delay (s)	0	-	-	10.4	10.7	7.3	0	-				
HCM Lane LOS	A	-	-	B	B	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.5	0.7	0	-	-				



# HCM 6th Signalized Intersection Summary 16: Park Ave & W 22nd St/Driveway

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour




												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↕		↔	↕	
Traffic Volume (veh/h)	40	5	70	20	5	10	360	860	20	30	760	30
Future Volume (veh/h)	40	5	70	20	5	10	360	860	20	30	760	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		1.00	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	6	67	22	6	0	400	956	20	33	844	30
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	152	23	102	262	57	0	522	2474	52	479	2432	86
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.00	0.70	0.70	0.70	0.70	0.70	0.70
Sat Flow, veh/h	461	197	882	1161	490	0	633	3557	74	575	3496	124
Grp Volume(v), veh/h	117	0	0	28	0	0	400	478	498	33	429	445
Grp Sat Flow(s),veh/h/ln	1540	0	0	1651	0	0	633	1777	1854	575	1777	1844
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	0.0	30.1	5.6	5.6	1.3	4.9	4.9
Cycle Q Clear(g_c), s	3.6	0.0	0.0	0.7	0.0	0.0	35.0	5.6	5.6	6.9	4.9	4.9
Prop In Lane	0.38		0.57	0.79		0.00	1.00		0.04	1.00		0.07
Lane Grp Cap(c), veh/h	276	0	0	318	0	0	522	1236	1290	479	1236	1283
V/C Ratio(X)	0.42	0.00	0.00	0.09	0.00	0.00	0.77	0.39	0.39	0.07	0.35	0.35
Avail Cap(c_a), veh/h	567	0	0	589	0	0	522	1236	1290	479	1236	1283
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.2	0.0	0.0	20.0	0.0	0.0	10.9	3.2	3.2	4.6	3.1	3.1
Incr Delay (d2), s/veh	1.0	0.0	0.0	0.1	0.0	0.0	10.3	0.9	0.9	0.3	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	0.0	0.3	0.0	0.0	3.9	0.9	0.9	0.1	0.8	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.3	0.0	0.0	20.1	0.0	0.0	21.2	4.1	4.1	4.9	3.8	3.8
LnGrp LOS	C	A	A	C	A	A	C	A	A	A	A	A
Approach Vol, veh/h		117			28			1376			907	
Approach Delay, s/veh		22.3			20.1			9.0			3.9	
Approach LOS		C			C			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		10.3		40.0		10.3				
Change Period (Y+Rc), s		5.0		4.5		5.0		4.5				
Max Green Setting (Gmax), s		35.0		15.5		35.0		15.5				
Max Q Clear Time (g_c+I1), s		37.0		5.6		8.9		2.7				
Green Ext Time (p_c), s		0.0		0.4		8.6		0.1				
<b>Intersection Summary</b>												
HCM 6th Ctrl Delay			7.9									
HCM 6th LOS			A									

HCM 6th TWSC  
17: Estes Rd/Normal Ave & W 22nd St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

Intersection

Int Delay, s/veh 9.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	350	0	10	90	10	5
Future Vol, veh/h	350	0	10	90	10	5
Conflicting Peds, #/hr	0	5	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	389	0	11	100	11	6

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	89	66	0
Stage 1	61	-	-
Stage 2	28	-	-
Critical Hdwy	6.42	6.22	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	-
Pot Cap-1 Maneuver	912	998	-
Stage 1	962	-	-
Stage 2	995	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	906	993	-
Mov Cap-2 Maneuver	906	-	-
Stage 1	962	-	-
Stage 2	988	-	-






















Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	906	1479
HCM Lane V/C Ratio	-	-	0.429	0.008
HCM Control Delay (s)	-	-	11.9	7.5
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	2.2	0

# HCM 6th Signalized Intersection Summary

## 18: Midway/Park Ave & E Park Ave

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	70	0	430	40	600	0	390	570	660	250	40
Future Volume (veh/h)	70	70	0	430	40	600	0	390	570	660	250	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	78	78	0	509	0	0	0	433	0	528	566	44
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	94	94	0	581	0		0	435		535	514	40
Arrive On Green	0.10	0.10	0.00	0.16	0.00	0.00	0.00	0.23	0.00	0.30	0.30	0.30
Sat Flow, veh/h	905	905	0	3534	0	1572	0	1856	1572	1767	1699	132
Grp Volume(v), veh/h	156	0	0	509	0	0	0	433	0	528	0	610
Grp Sat Flow(s),veh/h/ln	1810	0	0	1767	0	1572	0	1856	1572	1767	0	1831
Q Serve(g_s), s	8.7	0.0	0.0	14.4	0.0	0.0	0.0	23.9	0.0	30.5	0.0	31.0
Cycle Q Clear(g_c), s	8.7	0.0	0.0	14.4	0.0	0.0	0.0	23.9	0.0	30.5	0.0	31.0
Prop In Lane	0.50		0.00	1.00		1.00	0.00		1.00	1.00		0.07
Lane Grp Cap(c), veh/h	188	0	0	581	0		0	435		535	0	554
V/C Ratio(X)	0.83	0.00	0.00	0.88	0.00		0.00	1.00		0.99	0.00	1.10
Avail Cap(c_a), veh/h	212	0	0	621	0		0	435		535	0	554
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	45.0	0.0	0.0	41.8	0.0	0.0	0.0	39.2	0.0	35.5	0.0	35.7
Incr Delay (d2), s/veh	21.5	0.0	0.0	12.8	0.0	0.0	0.0	42.2	0.0	35.6	0.0	68.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	0.0	0.0	7.1	0.0	0.0	0.0	15.6	0.0	17.7	0.0	23.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.5	0.0	0.0	54.6	0.0	0.0	0.0	81.4	0.0	71.2	0.0	104.7
LnGrp LOS	E	A	A	D	A		A	F		E	A	F
Approach Vol, veh/h		156			509			433			1138	
Approach Delay, s/veh		66.5			54.6			81.4			89.1	
Approach LOS		E			D			F			F	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		29.0		21.8		36.0		15.6				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		24.0		18.0		31.0		12.0				
Max Q Clear Time (g_c+I1), s		25.9		16.4		33.0		10.7				
Green Ext Time (p_c), s		0.0		0.4		0.0		0.1				

### Intersection Summary

HCM 6th Ctrl Delay	78.2
HCM 6th LOS	E

### Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

# HCM 6th Signalized Intersection Summary 19: E 20th St & SR-99 SB Off Ramp

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑	↑	↑↑	↑↑					↑	↑	↑↑
Traffic Volume (veh/h)	0	1240	90	330	740	0	0	0	0	960	0	550
Future Volume (veh/h)	0	1240	90	330	740	0	0	0	0	960	0	550
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	1305	37	347	779	0				1011	0	579
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1303	581	434	1974	0				1089	0	969
Arrive On Green	0.00	0.37	0.37	0.13	0.56	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	3647	1585	3456	3647	0				3563	0	3170
Grp Volume(v), veh/h	0	1305	37	347	779	0				1011	0	579
Grp Sat Flow(s),veh/h/ln	0	1777	1585	1728	1777	0				1781	0	1585
Q Serve(g_s), s	0.0	29.0	1.2	7.7	9.9	0.0				21.8	0.0	12.3
Cycle Q Clear(g_c), s	0.0	29.0	1.2	7.7	9.9	0.0				21.8	0.0	12.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1303	581	434	1974	0				1089	0	969
V/C Ratio(X)	0.00	1.00	0.06	0.80	0.39	0.00				0.93	0.00	0.60
Avail Cap(c_a), veh/h	0	1303	581	874	2426	0				1126	0	1002
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.0	16.2	33.6	10.0	0.0				26.6	0.0	23.3
Incr Delay (d2), s/veh	0.0	25.3	0.0	1.3	0.0	0.0				12.6	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.9	0.4	3.2	3.4	0.0				10.6	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	50.4	16.3	34.9	10.1	0.0				39.2	0.0	23.9
LnGrp LOS	A	F	B	C	B	A				D	A	C
Approach Vol, veh/h		1342			1126						1590	
Approach Delay, s/veh		49.4			17.7						33.6	
Approach LOS		D			B						C	
Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	14.9	35.0		29.2		49.9						
Change Period (Y+Rc), s	5.0	* 6		* 5		* 6						
Max Green Setting (Gmax), s	20.0	* 29		* 25		* 54						
Max Q Clear Time (g_c+I), s	19.7	31.0		23.8		11.9						
Green Ext Time (p_c), s	0.2	0.0		0.4		2.2						

## Intersection Summary

HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

# HCM 6th Signalized Intersection Summary 20: SR-99 NB Off Ramp & E 20th St

Chico Barber Yard SP  
Cumulative Plus Project Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰↱	↑↑			↑↑	↰	↰	↱	↰			
Traffic Volume (veh/h)	440	1760	0	0	980	1000	90	0	350	0	0	0
Future Volume (veh/h)	440	1760	0	0	980	1000	90	0	350	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach	No			No			No					
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	463	1853	0	0	1032	633	95	0	285			
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	574	2269	0	0	1431	629	744	0	331			
Arrive On Green	0.17	0.64	0.00	0.00	0.40	0.40	0.21	0.00	0.21			
Sat Flow, veh/h	3456	3647	0	0	3647	1562	3563	0	1585			
Grp Volume(v), veh/h	463	1853	0	0	1032	633	95	0	285			
Grp Sat Flow(s),veh/h/ln	1728	1777	0	0	1777	1562	1781	0	1585			
Q Serve(g_s), s	9.3	28.4	0.0	0.0	17.6	29.0	1.6	0.0	12.5			
Cycle Q Clear(g_c), s	9.3	28.4	0.0	0.0	17.6	29.0	1.6	0.0	12.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	574	2269	0	0	1431	629	744	0	331			
V/C Ratio(X)	0.81	0.82	0.00	0.00	0.72	1.01	0.13	0.00	0.86			
Avail Cap(c_a), veh/h	960	2665	0	0	1431	629	1237	0	550			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	28.9	9.8	0.0	0.0	18.1	21.5	23.2	0.0	27.5			
Incr Delay (d2), s/veh	1.0	1.5	0.0	0.0	1.6	37.5	0.0	0.0	3.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	8.8	8.9	0.0	0.0	6.9	16.1	0.6	0.0	4.8			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.9	11.4	0.0	0.0	19.7	59.0	23.2	0.0	31.1			
LnGrp LOS	C	B	A	A	B	F	C	A	C			
Approach Vol, veh/h	2316			1665			380					
Approach Delay, s/veh	15.1			34.6			29.1					
Approach LOS	B			C			C					
Timer - Assigned Phs	2			5			6			8		
Phs Duration (G+Y+Rc), s	52.0			17.0			35.0			20.0		
Change Period (Y+Rc), s	* 6			5.0			* 6			5.0		
Max Green Setting (Gmax), s	* 54			20.0			* 29			25.0		
Max Q Clear Time (g_c+I1), s	30.4			11.3			31.0			14.5		
Green Ext Time (p_c), s	7.3			0.7			0.0			0.6		

## Intersection Summary

HCM 6th Ctrl Delay	23.7
HCM 6th LOS	C

## Notes

User approved volume balancing among the lanes for turning movement.

\* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

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