



Traffic Signal Warrants Summary

District: 08
 County: Riv
 Route: 111
 Post Mile: T051.842

Date of Counts: 2/8/2018

Checked by: [Redacted]
 Date: [Redacted]

Prepared by: H. Trinh
 Date: 2/21/2018

Major Street: SR-111
 Minor Street: Via Roberto Miguel

Lanes: 2
 # Lanes: 1

Major Approach Speed: 55 mph
 Minor Approach Speed: 35 mph

| Warrant Evaluation Summary | Condition | ✓ | Warrant Met? |
|--|---|-------------------------------------|---------------|
| Warrant 1 - Eight Hour Vehicular Volume: | | | No |
| | A - Minimum Vehicular Volume or | <input checked="" type="checkbox"/> | |
| | B - Interruption of Continuous Traffic or | <input checked="" type="checkbox"/> | |
| | C - (80%) Combination of Condition A & B | <input checked="" type="checkbox"/> | |
| Warrant 2 - Four Hour Vehicular Volume | | | No |
| Warrant 3 - Peak Hour: | | | No |
| | Part A or | <input type="checkbox"/> | |
| | Part B | <input type="checkbox"/> | |
| Warrant 4 - Pedestrian Volume | | | No |
| Warrant 5 - School Crossing | | | Not Evaluated |
| Warrant 6 - Coordinated Signal System | | | No |
| Warrant 7 - Crash Experience Warrant | | | No |
| Warrant 8 - Roadway Network | | | No |
| Warrant 9 - Intersection Near a Grade Crossing | | | Not Evaluated |



Traffic Volumes

District: 08
 County: Riv
 Route: 111
 Post Mile: T051.842

Checked by:
 Date:

Date of Counts: 2/8/2018
 Prepared by: H. Trinh
 Date: 2/21/2018

Major Street: SR-111
 Minor Street: Via Roberto Miguel

Lanes: 2 or More Lanes
 Lanes: 1 Lane

Major Approach Speed: 55 mph
 Minor Approach Speed: 35 mph

Eight Hour Vehicular Volumes

| Hours | Major Street | | | Minor Street |
|-------------|---------------------|---------------------|--------------------------|------------------------|
| | Northbound Approach | Southbound Approach | Total of Both Approaches | Higher Volume Approach |
| 15:00-16:00 | 1447 | 1224 | 2671 | 51 |
| 16:00-17:00 | 1407 | 1220 | 2627 | 42 |
| 17:00-18:00 | 1297 | 1279 | 2576 | 27 |
| 14:00-15:00 | 1245 | 1123 | 2368 | 44 |
| 8:00-9:00 | 966 | 1341 | 2307 | 48 |
| 7:00-8:00 | 917 | 1324 | 2241 | 152 |
| 9:00-10:00 | 983 | 1087 | 2070 | 24 |
| 6:00-7:00 | 456 | 769 | 1225 | 44 |

Highest Four Hour Vehicular Volumes

| Hours | Major Street | | | Minor Street |
|-------------|---------------------|---------------------|--------------------------|------------------------|
| | Northbound Approach | Southbound Approach | Total of Both Approaches | Higher Volume Approach |
| 15:00-16:00 | 1447 | 1224 | 2671 | 51 |
| 16:00-17:00 | 1407 | 1220 | 2627 | 42 |
| 17:00-18:00 | 1297 | 1279 | 2576 | 27 |
| 14:00-15:00 | 1245 | 1123 | 2368 | 44 |

Peak Hour Volumes

| Peak Hour | Major Street | | | Minor Street | Total Entering Volume |
|-------------|---------------------|---------------------|--------------------------|------------------------|-----------------------|
| | Northbound Approach | Southbound Approach | Total of Both Approaches | Higher Volume Approach | |
| 15:00-16:00 | 1447 | 1224 | 2671 | 51 | 2756 |

Highest Four Hour Pedestrian Volumes

| Peak Hour | Vehicles on the Major Street (Total of Both Approaches) | Pedestrian Crossing Volumes on Major Street (total of all crossings) |
|-------------|--|---|
| 15:00-16:00 | 2671 | 1 |
| 16:00-17:00 | 2627 | 1 |
| 17:00-18:00 | 2576 | 2 |
| 14:00-15:00 | 2368 | 0 |

Pedestrian 1 Hour Volumes (any four consecutive 15 Minute periods)

| Peak Hour | Vehicles on the Major Street (Total of Both Approaches) | Pedestrian Crossing Volumes on Major Street (total of all crossings) |
|-------------|--|---|
| 15:00-16:00 | 2671 | 1 |
| 16:00-17:00 | 2627 | 1 |
| 17:00-18:00 | 2576 | 2 |
| 14:00-15:00 | 2368 | 0 |

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 1 of 5)

08 Riv 111 T051.842
 DIST CO RTE PM

COUNT DATE 2/8/2018
 CALC H. Trinh DATE 2/21/2018
 CHK 0 DATE 1/0/1900

Major St: SR-111 Lanes: 2 or More Lanes Critical Approach Speed 55 mph
 Minor St: Via Roberto Miguel Lanes: 1 Lane Critical Approach Speed 35 mph

Speed limit or Critical speed of major street traffic > 40 mph ----- Yes or }
 In built up area of isolated community of < 10,000 population. ----- } **RURAL**

WARRANT 1 - Eight Hour Vehicular Volume **SATISFIED** **No**
 (Condition A or Condition B or combination of A and B must be satisfied)

Condition A - Minimum Vehicular Volume **100% SATISFIED** **No**
80% SATISFIED **No**

| APPROACH LANES | MINIMUM REQUIREMENTS (80% SHOWN IN BOLD) | | | | 15:00-16:00 | 16:00-17:00 | 17:00-18:00 | 14:00-15:00 | 8:00-9:00 | 7:00-8:00 | 9:00-10:00 | 6:00-7:00 | Hour |
|------------------|--|------------|------------|------------|-------------|-------------|-------------|-------------|-----------|-----------|------------|-----------|------|
| | URBAN | RURAL | URBAN | RURAL | | | | | | | | | |
| | 1 | | 2 or More | | | | | | | | | | |
| Both Approaches | 500 | 350 | 600 | 420 | 2671 | 2627 | 2576 | 2368 | 2307 | 2241 | 2070 | 1225 | |
| Major Street | 400 | 280 | 480 | 336 | | | | | | | | | |
| Highest Approach | 150 | 105 | 200 | 140 | 51 | 42 | 27 | 44 | 48 | 152 | 24 | 44 | |
| Minor Street | 120 | 84 | 160 | 112 | | | | | | | | | |

Condition B - Interruption of Continuous Traffic **100% SATISFIED** **No**
80% SATISFIED **No**

| APPROACH LANES | MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS) | | | | 15:00-16:00 | 16:00-17:00 | 17:00-18:00 | 14:00-15:00 | 8:00-9:00 | 7:00-8:00 | 9:00-10:00 | 6:00-7:00 | Hour |
|------------------|--|------------|------------|------------|-------------|-------------|-------------|-------------|-----------|-----------|------------|-----------|------|
| | URBAN | RURAL | URBAN | RURAL | | | | | | | | | |
| | 1 | | 2 or More | | | | | | | | | | |
| Both Approaches | 750 | 525 | 900 | 630 | 2671 | 2627 | 2576 | 2368 | 2307 | 2241 | 2070 | 1225 | |
| Major Street | 600 | 420 | 720 | 504 | | | | | | | | | |
| Highest Approach | 75 | 53 | 100 | 70 | 51 | 42 | 27 | 44 | 48 | 152 | 24 | 44 | |
| Minor Street | 60 | 42 | 80 | 56 | | | | | | | | | |

Combination of Condition A & B **SATISFIED** **No**

| REQUIREMENT | CONDITION | ✓ | FULFILLED |
|--|--|----|-----------|
| TWO CONDITIONS SATISFIED 80% | A. MINIMUM VEHICULAR VOLUME | No | No |
| | AND, B. INTERRUPTION OF CONTINUOUS TRAFFIC | No | |
| AND, AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS | | | |

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 2 of 5)

WARRANT 2 - Four Hour Vehicular Volume

SATISFIED* YES NO

Record hourly vehicular volumes for any four hours of an average day.

| APPROACH LANES | One | 2 or More | Hour | | | |
|--|-------------------------------------|-------------------------------------|-------------|-------------|-------------|---|
| | | | 15:00-16:00 | 16:00-17:00 | 17:00-18:00 | 14:00-15:00 |
| Both Approaches - Major Street | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2671 | 2627 | 2576 | 2368 |
| Highest Approaches - Minor Street | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 51 | 42 | 27 | 44 |
| *All plotted points fall above the applicable curve in Figure 4C -1. (URBAN AREAS) | | | | | | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| OR, All plotted points fall above the applicable curve in Figure 4C-2. (RURAL AREAS) | | | | | | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |

**WARRANT 3 - Peak Hour
 (Part A or Part B must be satisfied)**

SATISFIED YES NO

PART A

(All parts 1, 2, and 3 below must be satisfied for the same one hour, for any four consecutive 15-minute periods)

SATISFIED YES NO

| | Hour 5:00-16:0 | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
|---|-------------------|-------------------------------------|--|
| 1. The total delay experienced by traffic on one minor street approach (one direction only) controlled by a STOP sign equals or exceeds four vehicle-hours for a one lane approach, or five vehicle-hours for a two-lane approach; AND | | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND | 51 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. | 2756 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

PART B

SATISFIED YES NO

| APPROACH LANES | One | 2 or More | Hour | |
|--|-------------------------------------|-------------------------------------|-------------|--|
| | | | 15:00-16:00 | |
| Both Approaches - Major Street | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2671 | |
| Highest Approaches - Minor Street | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 51 | |
| *All plotted points fall above the applicable curve in Figure 4C-3. (URBAN AREAS) | | | | |
| OR, All plotted points fall above the applicable curve in Figure 4C-4. (RURAL AREAS) | | | | |

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Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 3 of 5)

WARRANT 4 - Pedestrian Volume
 (Parts 1 and 2 Must be Satisfied)

SATISFIED YES NO

Part 1 (Parts A or B must be satisfied)

| Hour --- > | 15:00-16:00 | 16:00-17:00 | 17:00-18:00 | 14:00-15:00 |
|--------------------------------------|-------------|-------------|-------------|-------------|
| A. Vehicles per hour for any 4 hours | 2671 | 2627 | 2576 | 2368 |
| Pedestrians per hour for any 4 hours | 1 | 1 | 2 | 0 |
| B. Vehicles per hour for any 1 hours | 2671 | 2627 | 2576 | 2368 |
| Pedestrians per hour for any 1 hours | 1 | 1 | 2 | 0 |

Figure 4C-5 or Figure 4C-6
 SATISFIED YES NO

Figure 4C-7 or Figure 4C-8
 SATISFIED YES NO

Part 2

SATISFIED YES NO

| | | |
|--|---|--|
| <u>AND</u> , The distance to the nearest traffic signal along the major street is greater than 300 ft | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| <u>OR</u> , The proposed traffic signal will not restrict progressive traffic flow along the major street. | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

WARRANT 5 - School Crossing
 (Parts A and B Must be Satisfied)

Not Evaluated

SATISFIED YES NO

Part A
 Gap/Minutes and # of children

SATISFIED YES NO

| | | Hour | | |
|---|---------------------------------|------|----------------|--|
| Gaps vs Minutes | Minutes Children Using Crossing | | Gaps < Minutes | YES <input type="checkbox"/> NO <input type="checkbox"/> |
| | Number of Adequate Gaps | | | <u>AND</u> Children > 20/hr |
| School Age Pedestrians Crossing Street / hr | | | | |

| | | |
|--|------------------------------|-----------------------------|
| <u>AND</u> , Consideration has been given to less restrictive remedial measures. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
|--|------------------------------|-----------------------------|

Part B

SATISFIED YES NO

| | | |
|--|------------------------------|-----------------------------|
| The distance to the nearest traffic signal along the major street is greater than 300 ft | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| <u>OR</u> , The proposed signal will not restrict the progressive movement of traffic. | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

California MUTCD 2014 Edition
 (FHWA's MUTCD 2009 Edition, including Revisions 1 & 2, as amended for use in California)

Figure 4C-101 (CA). Traffic Signal Warrants Worksheet (Sheet 4 of 5)

WARRANT 6 - Coordinated Signal System SATISFIED YES NO
 (All parts must be satisfied)

| MINIMUM REQUIREMENTS | DISTANCE TO NEAREST SIGNAL | | |
|--|--|---|--|
| ≥ 300 m (1000 ft) | N _____ ft, S <u>1000</u> ft, E _____ ft, W _____ ft | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| On a one-way street or a street that has traffic predominantly in one direction, the adjacent traffic control signals are so far apart that they do not provide the necessary degree of vehicular platooning. | | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| OR, On a two-way street, adjacent traffic control signal do not provide the necessary degree of platooning and the proposed and adjacent traffic control signals will collectively provide a prgressive operation. | | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

WARRANT 7 - Crash Experience Warrant SATISFIED YES NO
 (All Parts Must Be Satisfied)

| Adequate trial of alternatives with satisfactory observance and enforcement has failed to reduce the crash frequency. | | Yes <input type="checkbox"/> | No <input type="checkbox"/> |
|---|--|------------------------------|--|
| REQUIRMENTS | Number of crashes reported within a 12 month period susceptible to correction by a traffic signal, and involving injury or damage exceeding the requirements for a reportable crash. | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| 5 OR MORE | 1 | | |
| REQUIREMENTS | CONDITIONS | ✓ | |
| ONE CONDITION SATISFIED 80% | Warrant 1, Condition A - Minimum Vehicular Volume | <input type="checkbox"/> | |
| | OR Warrant 1, Condition B - Interruption of Continuous Traffic | <input type="checkbox"/> | |
| | OR, Warrant 4, Pedestrian Volume Condition Ped Vol ≥ 80% of Figure 4C-5 through Figure 4C-8 | <input type="checkbox"/> | |
| | | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |

WARRANT 8 - Roadway Network SATISFIED YES NO
 (All Parts Must Be Satisfied)

| MINIMUM VOLUME REQUIREMENTS | ENTERING VOLUMES - ALL APPROACHES | ✓ | FULFILLED |
|--|---|---|---|
| 1000 Veh/Hr | During Typical Weekday Peak Hour <u>1153</u> Veh/Hr and has 5-year projected traffic volumes that meet one or more of Warrants 1, 2, and 3 during an average weekday. | <input checked="" type="checkbox"/> | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| | OR During Each of Any 5 Hrs. of a Sat. or Sun. _____ Veh/Hr | <input type="checkbox"/> | |
| CHARACTERISTICS OF MAJOR ROUTES | | MAJOR ROUTE A | MAJOR ROUTE B |
| Hwy. System Serving as Principal Network for Through Traffic | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Rural or Suburban Highway Outside Of, Entering, or Traversing a City | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Appears as Major Route on an Official Plan . | | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Any Major Route Characteristics Met, Both Streets | | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | |

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