TRAFFIC ENGINEERING STUDY
Red Light Running Camera Evaluation
Analysis WB US 290 Service Road at West Road Jersey Village, Texas

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I. INTRODUCTION

PURPOSE

This traffic study is intended for the evaluation of potential safety deficiencies and installation of red light running counter-measures for the intersections of westbound US 290 Service Road at West Road, in the City of Jersey Village, Texas. Only one approach, westbound US 290 Service Road, is being considered; as depicted in Figure 1. The traffic engineering analysis consists of traffic data collection, qualitative assessment of the conditions, crash analysis, evaluation of signal operations and visibility, and evaluation of signal clearance intervals. Based on the analysis performed in this study, a series of effective counter-measures will be evaluated and recommended.

REQUIREMENTS

Texas Transportation Code Title 7 (Vehicles and Traffic) Subtitle I (Enforcement of Traffic Laws) Chapter 707 (Photographic Traffic Signal Enforcement System Section 707.003 (Installation and Operation of Photographic Traffic Signal Enforcement System), requires that the local authority shall conduct a traffic engineering study of the approach to determine whether, in addition to or as an alternative to the system, a design change to the approach or a change in the signalization of the intersection is likely to reduce the number of red light violations at the intersection.

Section 707.003, further requires that the intersection approach must be selected for the installation of a photographic traffic signal enforcement system based on traffic volume, the history of accidents at the approach, the number or frequency of red light violations at the intersection, and similar traffic engineering and safety criteria, without regard to the ethnic or socioeconomic characteristics of the area in which the approach is located.

In addition to the requirements of Section 707.003, the traffic study evaluated and documented the criteria outlined in the Texas Department of Transportation (TxDOT) Form 2296-RLC "Evaluation of the Need for Red Light Running Camera Engineering Analysis".

The United States Department of Transportation Federal Highway Administration (FHWA) developed an *Engineering Countermeasures to Reduce Red-Light Running Intersection Safety Brief (FHWA-SA-10-005)* that defines red-light running and provides potential engineering countermeasures to reducing red-light running. Some of the engineering countermeasures listed in the brief include:

- Improving Signal Visibility and Conspicuity,
- Increasing the Likelihood for stopping,
- Removing reasons for intentional violations and
- Eliminating the need to stop.

Figure 1. Intersection Location Map

II. INTERSECTION CONDITION ASSESSMENT

This section includes an assessment of the intersection operation and current field conditions as reviewed by a qualified registered professional traffic engineer.

As shown on Figure 1, West Road passes under US 290 (also known as Northwest Freeway) mainline; and intersects the EB & WB US 290 Service Roads at grade on north & south side of the freeway main line. Both EB & WB US 290 Service Road signals are operated with a single controller as shown on the signal schematic on Figure 2, provided by TxDOT.

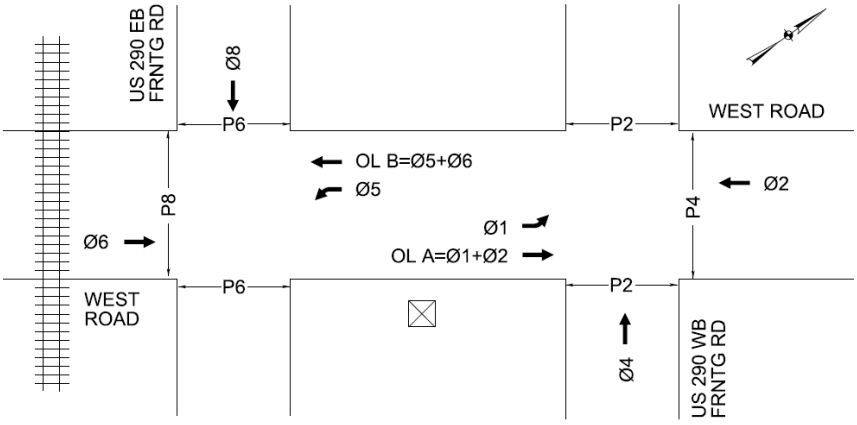


Figure 2. Traffic Signal Phasing

Section below is a summary of the intersection assessment including signal visibility, pavement condition, vehicle detection system, and signal operations.

WB US 290 Service Road Approach

The WB approach is currently affected by the construction activities for the US 290 mainline. The construction on the westbound service road is substantially complete, but there are reoccurring lane closures. Once complete, it will consist of 4 lanes (1 left/U-turn through, 1 shared through + left, 1 through, 1 right turn) with curb and sidewalk as shown in Figure 3.

Figure 3. WB US 290 Service Road Approach

Signal Visibility – Signal heads are visible from 1000'+ which is more than the MUTCD requirement of 390', as shown on Table 4D-2 below for posted speed of 40 mph. The signal heads are not currently at the final position due to on-going construction, the visibility is not affected and expected to improve after completion. A "signal ahead" sign is not present on this approach and is not needed. The temporary traffic signal heads are horizontal-mounted and include "tunnel visors" and "backplates" for maximum visibility. The proposed signals will also have "tunnel visors" and "backplates" as shown on the signal plans.

Pavement Conditions – A visual inspection of the pavement condition at the intersection showed no signs of significant wearing or cracking that could inhibit a driver's ability to stop while approaching the intersection. Due to construction, the required pavement marking (i.e. stop bar, lane lines, arrows, crosswalks) are worn or are partially missing. The proposed traffic signal plans indicate installation of all required markings per MUTCD requirements (see Appendix E for signal plans). Signing is adequate and in conformance with MUTCD.

Vehicle Detectors – Three (3) sets Loop sensors are installed in the pavement on this approach. 6' x 20' presence sensors are installed at the stop bar in all lanes, 6' x 6' advance pulse sensors are installed at approximately 110' and 240' from the stop, in all lanes. Pedestrian signal heads are installed and will be improved as a part of the signal reconstruction.

Table 4D-2. Minimum Sight Distance for Signal Visibility

85th-Percentile Speed	Minimum Sight Distance
20 mph	175 feet
25 mph	215 feet
30 mph	270 feet
35 mph	325 feet
40 mph	390 feet
45 mph	460 feet
50 mph	540 feet
55 mph	625 feet
60 mph	715 feet

Note: Distances in this table are derived from stopping sight distance plus an assumed queue length for shorter cycle lengths (60 to 75 seconds).

Table 1. 2009 MUTCD Table 4D-2

Signal Operation – Arrival at the signal is random due to substantial separation distance from the previous signal at Jones Road. Significant queuing was observed at signal during the mid-day field visit. Some of the queues are attributed to the ongoing construction off the roadway, but signal operation can be improved by optimizing the signal timings. The signal phasing and operation is not a contributing factor to red light running.

III. TRAFFIC VOLUMES

24-hour directional traffic volume data were collected on October 2, 2018 as shown on Figures 4-through 6, depicting the daily flow variation and hourly volumes. Copies of the actual volume data are provided in the Appendix C of this report. As shown, data indicate distinct AM & PM peak in the for the SB West Road, between the hours of 7:00 to 8:00 AM and 5:00-6:00 PM. The morning peak occurs on EB US 290 Service Road between 7:00-8:00 AM and the afternoon high peak occurs between 6:00 to 7:00 PM on WB US 290 Service Road.

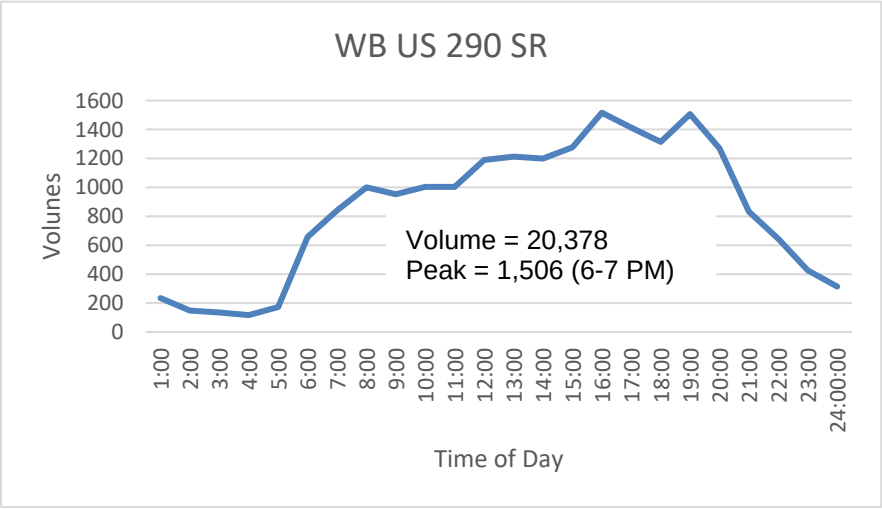


Figure 4. WB US 290 Service Road Daily Traffic Flow

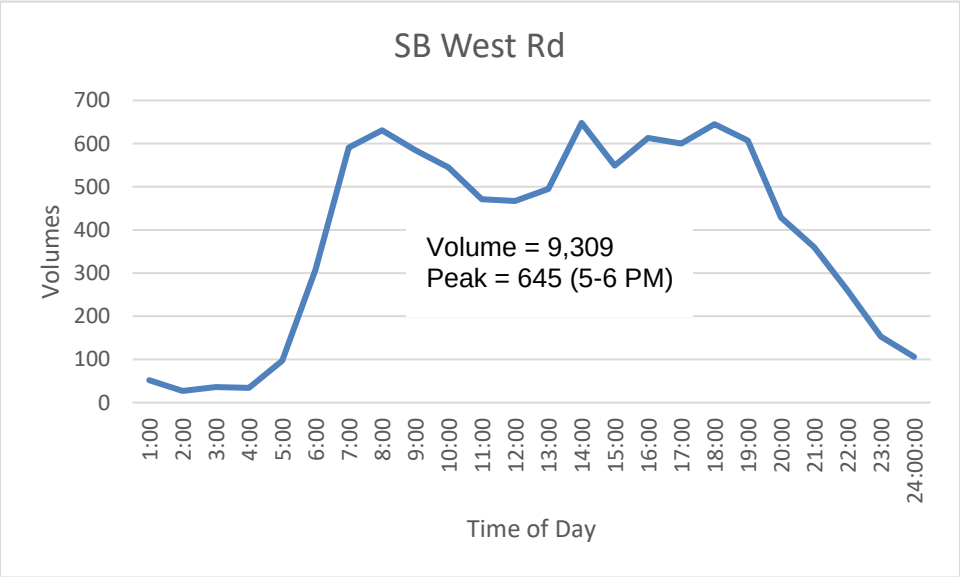


Figure 5. SB West Road Daily Traffic Flow

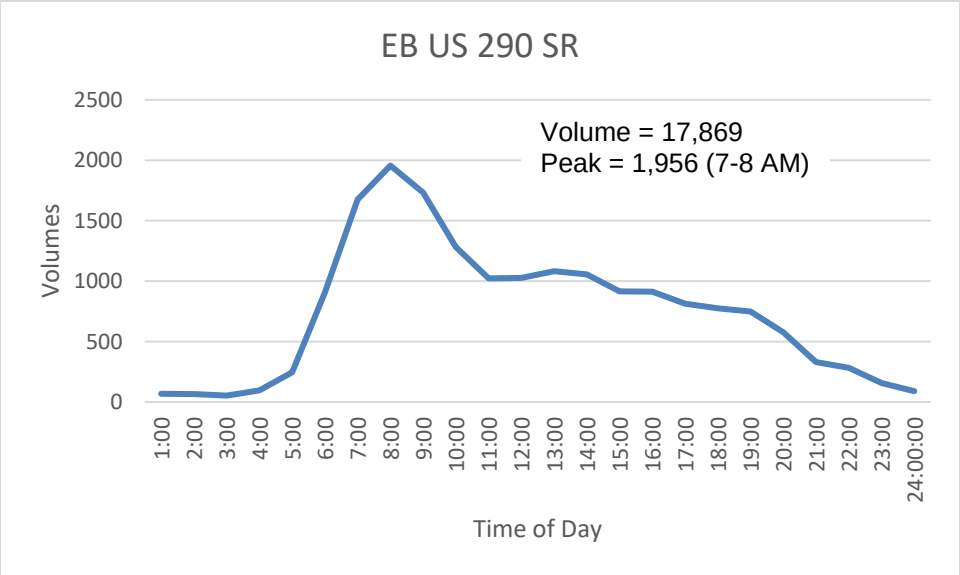


Figure 6. EB US 290 Service Road Daily Traffic Flow

IV. CRASH ANALYSIS

City of Jersey Village Police Department (JVPD) complied and provided detailed crash histories for the period January 1, 2016 through July 2018 for the westbound approach by type and severity. Table 2 contains summaries of the crash data by year and by type. Detail summaries provided by JVPD are provided in the Appendix B of this report.

Year	Total	Right Angle	Rear End	Side Swipe	Other	Injury Crash	RLC Related
2016	19	17	2	0	0	3	4
2017	14	11	3	0	0	4	7
2018 (through July)	8	5	3	0	0	3	1

Table 2. Crash Summary (1/2016-7/2018, JVPD)

It should be noted that the westbound US 290 Service Road at West Road has been under construction during 2017 and until recently in 2018. The construction included lane closures on the WB approach, and affecting the intersection operation on the north side of the freeway. Therefore, crash data for the westbound US 290 Service Road approach have been clearly affected for 2017 and 2018, as can be seen from the crash data tables. 2016 data show a more accurate depiction of the crash patterns without construction interference. It is expected that the crash rates will stabilize and rise for the westbound direction after the completion of the project.

The analysis of the data suggests a severe pattern of “right-angle” type crashes at the intersection with relatively high incidents of running red light (RLC) type crashes. Westbound US 290 Service Road approach has the highest number of crashes. As “right-angle” crash type is typically susceptible to correction by installation of red light running counter-measures, the westbound approach is expected to be good candidates for consideration.

V. ENFORCEMENT DATA

City of Jersey Village provided records of enforcement activities for the most recent 18-month period (January 1, 2017 through August 20, 2018). Records indicate that a total of 5,671 citations were issued for the 3-mile section of EB & WB US 290 Service Road, from Hilcrest Road to N Eldridge Parkway.

For the intersection of EB & WB US 290 Service Road at West Road, a total of 304 citations were issues, 229 in Westbound direction and 75 in the eastbound direction. A total includes 9 “red light running” citations were issued, 7 in the westbound direction and 2 in the eastbound direction. Some of the reasons for citations included the following:

- Speeding
- Unsafe lane change
- Turn from improper lane

VI. SIGNAL CLEARANCE INTERVALS

Traffic existing signal timing data was provided by TXDOT and is shown in Table 3. Appendix D contains the full timing data document for the intersection.

Vehical Basic Timings							Misc Timings					Pedestrian Timings						
Phase	Min Green	Passage	Max1	Max2	Yellow	All Red	Green Delay	Yellow Delay	Walk Off	Walk Offset Mode	Bike Green	Walk	Ped Clr	Alt Walk	Alt Ped Clr	Flash Walk	Ext Ped Clr	Actuated Rest in Walk
1	5	2.0	30	30	4.0	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
2	5	2.0	40	45	4.5	1.5	0	0	0	0-Advance	0	7	12	0	0	No	2	No
3	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
4	10	3.0	55	70	4.5	1.5	0	0	0	0-Advance	0	7	12	0	0	No	2	No
5	5	2.0	20	20	4.0	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
6	5	2.0	40	45	4.5	1.5	0	0	0	0-Advance	0	5	12	0	0	No	2	No
7	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
8	5	1.0	50	55	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	2	No
9	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
10	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
11	0	0.0	0	0	3.5	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
12	2	2.0	2	2	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
13	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
14	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
15	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
16	2	2.0	2	2	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No

Table 3. Existing Signal Timing (Provided by TXDOT)

The calculated yellow and all-red clearance intervals were determined using formulas provided by the *ITE Traffic Engineering Handbook (5th Edition)*. The Yellow Change Interval time + Red Clearance Interval time includes a reaction time, a deceleration element, and an intersection clearing time, using the following equations:

$$Y = t + \frac{1.47v}{2(a + Gg)} \qquad R = \frac{W + L}{1.47v}$$

Where:
Y= yellow change interval (sec)
R= all-red interval (sec)
t= perception-reaction time (1 sec)
v= approach speed (ft/sec)
a= deceleration rate (10 ft/sec^2)
g=acceleration rate in response to the onset of a yellow indication. (ft/sec^2)
G= approach grade, with uphill positive and downhill negative (percent grade / 100)
W= width of intersection from near curb line to far curb line (ft)
L=length of vehicle (20 ft)

The calculated intervals are provided in Table 4.

Approach	Approach Grade %	Approach Speed MPH	W (Distance), Ft	Calculated Yellow Interval (Sec)	All-Red Interval (Sec)
WB US 290 Service Rd (Ø4)	0.000%	40	120	4.0	2.4

Table 4. Calculated Yellow & All-Red Intervals

A comparison of “existing” and “calculated values, is provided in Table 5.

Approach	Yellow Interval (Sec)		All-Red Interval (Sec)	
	Existing	Calculated	Existing	Calculated
WB US 290 Service Rd (Ø4)	4.5	4.0	1.5	2.4

Table 5. Yellow & All-Red Interval Comparison

Overall, the existing yellow intervals are higher and more conservative than the calculated values and shall remain in effect. The existing all-red intervals is lower than calculated value and should be adjusted from 1.5 to 2.4 seconds.

VII. TXDOT ENGINEERING ANALYSIS EVALUATION FORM

The Texas Department of Transportation (TxDOT) has developed an engineering analysis form titled “Evaluation of the Need for Red Light Running Camera Engineering Analysis” which is also referred to as Form 2296-RLC. The evaluation analysis worksheets, included in Appendix A, include sections for information on intersection and signal data, signal timing and traffic data, crash and enforcement data, and other supporting information.

VIII. POTENTIAL ENGINEERING COUNTERMEASURES

As discussed previously, the Texas Transportation Code Title 7 (Vehicles and Traffic) Subtitle I (Enforcement of Traffic Laws) Chapter 707 (Photographic Traffic Signal Enforcement System Section 707.003 (Installation and Operation of Photographic Traffic Signal Enforcement System), requires that the local authority shall conduct a traffic engineering study of the approach to determine whether, in addition to or as an alternative to the system, a design change to the approach or a change in the signalization of the intersection id likely to reduce the number of red light violations at the intersection.

Based on the criteria provided in the Institute of Transportation Engineers (ITE) and the Federal Highway Administration (FHWA) publication titled *Making Intersections Safer: A Toolbox of Engineering Countermeasures to Reduce Red-Light Running: An Informational Report.* Some of the engineering countermeasures, Table 6 below summarizes the countermeasures that can be considered under each of the countermeasure groupings identified above. These engineering countermeasures are based on a driver characteristic called the “unintentional violator.” This type of driver may be incapable of stopping or may be inattentive while approaching the intersection due to poor judgement by the driver or in the design or operation of the intersection. A second type of driver characteristic is the “intentional violator” who, based on his/her judgement, knows they may violate the signal yet proceeds through the intersection anyway. This type of driver is most affected by enforcement countermeasures, while unintentional red-light runners are most affected by engineering countermeasures.

Improvement Category	WB US 290 SR
Improve Signal Visibility/Conspicuity	
Signal for Each Approach Through Lane	Existing OK
Install Backplates	Existing OK
Modify Placement of Signal Heads	Existing OK
Increase Size of Signal Displays	Existing OK
Install Programmable Signal/ Visors or Louvers	Existing/Visors
Install LED Signal Lenses	Not Recommended
Increase the Likelihood for Stopping	
Install Signal Ahead Signs	Not Recommended
Install Transverse Rumble Strips	Not Recommended
Install Activated Advance Warning Flashers	Not Recommended
Improve Pavement Surface Condition	Not Recommended
Remove Reasons for Intentional Violations	
Adjust Yellow Change Interval	Existing OK
Provide or Adjust All-Red Clearance Interval	Adjust to 2.4 sec.
Adjust Signal Cycle Length	Evaluate
Provide Dilemma Zone Protection	Existing OK
Eliminate the Need to Stop	
Coordinate Signal Operation	N/A
Remove Unwarranted Signals	N/A
Construct a Roundabout	Not Recommended

Source: USDOT Federal Highway Administration

Table 6. Summary of Countermeasures for Reducing Red-Light Running

IX. CONCLUSIONS & RECOMMENDATIONS

The analysis determined a high concentration of “right-angle” type crashes for westbound US 290 Service Road approaches with West Road. The “right-angle” crash type at signalized intersections are generally attributed to failure to obey the traffic control device, either intentionally or un-intentionally. Due to recent construction activities, the most recent 18-month data do not reflect the most accurate depiction of the crash history at the intersection. Reliance on pre-construction crash data (2016) can be substantially revealing. The enforcement data provided by JVPD illustrates that although there has been a high level of enforcement, a persistent violation pattern remains. Implementation of a red-light-running cameras has been shown to significantly reduce the “right-angle” crash frequency at major intersections, specifically through the enforcement of “intentional violators”. Other red-light running counter-measures, designed to improve the conspicuity of the traffic signal, can also be considered to reduce the unintentional violations.

In conclusion, due to high rate of right-angle crashes, installation of red light running enforcement camera for the westbound US 290 Service Road is recommended. The installation will reduce the violation incidents and therefore enhance the overall safety of this approach. Other potentially effective red light running countermeasure listed on Table 6, will also further enhance the safety by curtailing violations. The final recommendations are:

- Adjust all-red interval to 2.4 seconds
- Install a red light running camera

APPENDIX INDEX

APPENDIX A
TxDOT ENGINEERING ANALYSIS WORKSHEET
(Form 2296RLC)

Evaluation of the Need for Red Light Running Cameras Engineering Analysis

City: Jersey Village County: Harris

Intersection: WB US 290 Service Roads at West Road
Note - WB US 290 SR at West Road is in final stages of completion.

A. Intersection and Signal Data

1. Signal Visibility
   a. Minimum Sight Distance to Signal

Approach	Grade	Speed Limit (MPH)	Measured (ft.)	Required (ft.)*
WB US 290 SR	0%	40	1000+	390

- See TMUTCD Table 4D-2 for minimum sight distance requirements

b. Are "SIGNAL AHEAD" warning signs present? Y ☐ Yes ☒ No

c. Are "SIGNAL AHEAD" warning signs needed? ☐ Yes ☒ No

d. Are other warning signs present in the vicinity of the intersection? ☐ Yes ☒ No

Explain: _____.

e. Information on Signal Heads Temporary signals for WB US 290 SR due to construction

Approach	Lens Size	Lens Type (LED or Bulb)	Back Plates (Y or N)	Retroreflective Border (Y or N)
WB US 290 SR	12"	Bulb	Y	N

2. Pavement and Marking Data
   a. Are stop bars in "good" condition? ☐ Yes ☒ No
   Explain: The stop bars are visible but need refreshed due to construction

   b. Are lanes "clearly" visible? ☐ Yes ☒ No
   Explain:

   c. Are crosswalks "clearly" marked? ☐ Yes ☒ No

   Explain: crosswalks are worn due to construction

   d. What is the pavement condition (ruts, potholes, cracking, etc.)?
   ☒ Good Explain:
   ☐ Fair Explain:
   ☐ Poor Explain:

e. Do pavement surface treatments exist (rumble strips, texturing, pavers, etc.)?

☐ Yes Explain:

☒ No

3. Provide diagram of intersection including: pavement markings, width of lanes and medians,

NORTH

See Signal Plans in Appendix E

location of signal heads and signs, locations of loops/detectors, and grades.

See signal plans provided by TxDOT in Appendix E

B. Signal Timing and Traffic Data

1. Clearance Intervals

Approach	Posted Speed Limit	Grade	Width of Intersection	Yellow Interval		All Red Interval	
				Existing	Calculated*	Existing	Calculated*
WB US 290 SR	40	0%	120’	4.5	4.0	1.5	2.4

- Reference ITE for calculation of clearance intervals

2. Include existing controller settings for each phase and each time-of-day. Information should include applicable settings such as minimum green, max 1 & 2, passage, minimum gap/ext., protected-permissive, lead-lag, yellow and all red, walk and ped clearance time, recall settings, offsets, cycle length, etc. Include analysis of peak hour conditions and a determination of whether signal timings are contributing to red-light running problems. See controller timings provided by TxDOT in Appendix D

   a. Does signal timing or phasing factor in as a possible contributor to red light running at this intersection?

   ☐ Yes Explain:
   ☒ No

   b. List comments or recommendations on potential signal timing or phasing changes:
   No phasing changes are recommended. Increase All-Red interval from as shown.

3. Vehicle Detection Data

Approach	Detection Type (loop, video, etc.)	Detector Location (measured from stop bar)
WB US 290 SR	Loop	6’ x 20’ at stop bar, 6’x6’ loops at 110’ & 240’

4. Traffic Volume Data

Approach	Daily Volumes		Peak Hour Volumes	
	Total	Heavy Vehicles	Total	Heavy Vehicles
SB West Rd	9,309	-	645	-
WB US 290 SR	20,378	-	1506	-
EB US 290 SR	17,869	-	1956	-

C. Crash and Enforcement Data

1. 12 Months of "Before" Crash Data

Approach	Collision Type	Total	Number of Injury Crashes	Number of Fatal Crashes	Crashes Associated with Red Light Running
WB US 290 SR	Rear End	2	0	0	0
	Angle	17	3	0	4
	Head-on	0	0	0	0
	Pedestrian	0	0	0	0
	Pedal cyclist	0	0	0	0
	Other	0	0	0	0
	Total	19	3	0	4
	Rear End	0	0	0	0
	Angle	0	0	0	0
	Head-on	0	0	0	0
	Pedestrian	0	0	0	0
	Pedal cyclist	0	0	0	0
	Other	0	0	0	0
	Total	0	0	0	0
	Rear End	0	0	0	0
	Angle	0	0	0	0
	Head-on	0	0	0	0
	Pedestrian	0	0	0	0
	Pedal cyclist	0	0	0	0
	Other	0	0	0	0
	Total	0	0	0	0
	Rear End	0	0	0	0
	Angle	0	0	0	0
	Head-on	0	0	0	0
	Pedestrian	0	0	0	0
	Pedal cyclist	0	0	0	0
	Other	0	0	0	0
	Total	0	0	0	0

Due to construction activities in 2017 & early 2018, 18-month most recent crash data are not used for analysis. 2016 crash data reflects the most recent un-affected crash data to be used for analysis.

2. Violation Rate

a. Number of red light running citations per year issued by law enforcement Number: 304 Citations on US 290 SR (229 EB & 75 WB) including 9 citations for running red light(2 EB & 7 WB)
Year: Jan. 1, 2017 – Aug. 20, 2018

b. Observed Violations: None Observed Date:
Time Period:

Approach	Traffic Volume	Number of Violations

3. Enforcement and Operational Issues

a. Describe the difficulty experienced by law enforcement officers in patrol cars or on foot in apprehending violators. Law enforcement resources are limited. This is a high congestion during morning and afternoon peak periods. Speed are also higher than posted. Enforcement level has been high with 3044 citations issued in 18-month period, but, red light running remains a concern with high level of "right-angle" crash types.

b. Describe the ability of law enforcement officers to apprehend violators safely within a reasonable distance from the violation. Law enforcement resources are limited for consistent enforcement. This is a congested area during AM & PM peak periods. Long enforcement activities affects the congestion level and impacts freeway ramp operation.

c. Are pedestrians at risk due to violations? ☐ Yes ☒ No
Explain:

Number of pedestrians per hour: None Observed
Pedestrian crosswalk provided? ☒ Yes ☐ No

d. Have there been any changes to the operations of the intersection (signal timing, restriping, increased enforcement, etc.) with the past three years. Yes. TxDOT is currently completing intersection improvements at the intersections on north side of the freeway.

D. Other Supporting Information:

See traffic study for more details.

APPENDIX B

CRASH DATA

2017 RLC YEAR TOTAL'S	Total Int. CRASHES	RLC RELATED CRASHES	RLC INJ CRASHES	RL RELATED INJ	NON RLR CRASHES	NON RLC REL.INJ CRASHES	NON RLC REL. INJ.	RLR FATAL CRASHES	RLC REL. FATALITIES	NON RLR FATAL CRA	NON RLR FATALITES
JV01 SB SENATE @ WBSR	1	0	0	0	1	0	0	0	0	0	0
JV02 NB Senate @ EBSR	9	3	1	1	6	1	1	0	0	0	0
JV03 EBSR @ SENATE	6	0	1	2	6	0	0	0	0	0	0
JV04 WBSR @ SENATE	5	1	0	0	4	0	0	0	0	0	0
JV05 SB JONES @ WBSR	6	0	0	0	6	1	1	0	0	0	0
JV06 WBSR @ JONES	8	1	0	0	7	0	0	0	0	0	0
JV07 EBSR @ JONES	10	1	0	0	9	1	1	0	0	0	0
JV08 EBSR @ FM 529	3	3	1	1	0	0	0	0	0	0	0
JV09 WBSR @ FM 529	5	0	1	1	5	0	0	0	0	0	0
JV13 WBSR @ WEST RD	14	7	2	3	7	0	0	0	0	0	0
JV18 NB FM 529 @ EBSR	9	1	0	0	8	1	1	0	0	0	0
	76	17	6	8	59	4	4	0	0	0	0

Source: JVPD

2018 RLC YEAR TOTAL'S	Total Int. CRASHES	RLC RELATED CRASHES	RLC INJ CRASHES	RL RELATED INJ	NON RLR CRASHES	NON RLC REL.INJ CRA.	NON RLC REL. INJ.	RLR FATAL CRASHES	RLC FATAL CRASHES	NON RLR FATALITIES	NON RLR FATALITES
JV01 SB SENATE @ WBSR	0	0	0	0	0	0	0	0	0	0	0
JV02 NBSenate @ EBSR	5	1	1	2	4	0	0	0	0	0	0
JV03 EBSR @ SENATE	3	0	0	0	3	1	1	0	0	0	0
JV04 WBSR @ SENATE	5	1	1	2	4	0	0	0	0	0	0
JV05 SB JONES @ WBSR	8	0	0	0	8	1	1	0	0	0	0
JV06 WBSR @ JONES	7	0	0	0	7	0	0	0	0	0	0
JV07 EBSR @ JONES	7	2	2	3	5	0	0	0	0	0	0
JV08 EBSR @ FM 529	4	1	1	1	3	1	2	0	0	0	0
JV09 WBSR @ FM 529	4	0	0	0	4	0	0	0	0	0	0
JV13 WBSR @ WEST RD	8	5	2	5	3	1	1	0	0	0	0
JV18 NB FM 529 @ EBSR	2	0	0	0	1	0	0	0	0	0	0
	53	10	7	13	42	4	5	0	0	0	0

Source: JVPD

2017 RLC YEAR TOTAL'S	Total Int. CRASHES	RLC RELATED CRASHES	RLC INJ CRASHES	RL RELATED INJ	NON RLR CRASHES	NON RLC REL.INJ CRASHES	NON RLC REL. INJ.	RLR FATAL CRASHES	RLC REL. FATALITIES	NON RLR FATAL CRA	NON RLR FATALITES
JV01 SB SENATE @ WBSR	1	0	0	0	1	0	0	0	0	0	0
JV02 NB Senate @ EBSR	9	3	1	1	6	1	1	0	0	0	0
JV03 EBSR @ SENATE	6	0	1	2	6	0	0	0	0	0	0
JV04 WBSR @ SENATE	5	1	0	0	4	0	0	0	0	0	0
JV05 SB JONES @ WBSR	6	0	0	0	6	1	1	0	0	0	0
JV06 WBSR @ JONES	8	1	0	0	7	0	0	0	0	0	0
JV07 EBSR @ JONES	10	1	0	0	9	1	1	0	0	0	0
JV08 EBSR @ FM 529	3	3	1	1	0	0	0	0	0	0	0
JV09 WBSR @ FM 529	5	0	1	1	5	0	0	0	0	0	0
JV13 WBSR @ WEST RD	14	7	2	3	7	0	0	0	0	0	0
JV18 NB FM 529 @ EBSR	9	1	0	0	8	1	1	0	0	0	0
	76	17	6	8	59	4	4	0	0	0	0

Source: JVPD

ticketnum	Date	Time	street	st_num	Violation
C0039311	01/17/17	11:02:00 PM	Northwest Freeway SR E	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0039311	01/17/17	11:02:00 PM	Northwest Freeway SR E	18600	NO DRIVER'S LICENSE
C0039311	01/17/17	11:02:00 PM	Northwest Freeway SR E	18600	EXPIRED MVR
C0039311	01/17/17	11:02:00 PM	Northwest Freeway SR E	18600	DISPLAY FICTITIOUS LICENSE PLATE
C0045690	12/12/17	11:32:00 PM	Northwest Freeway SR E	18600	PUBLIC INTOXICATION
C0047619	04/01/18	8:32:00 AM	Northwest Freeway SR E	18600	EXPIRED MVR
C0047619	04/01/18	8:32:00 AM	Northwest Freeway SR E	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0047985	04/22/18	##########	Northwest Freeway SR E	18600	EXPIRED MVR
C0039201	01/12/17	6:23:00 PM	Northwest Freeway SR E	18700	NO DRIVER'S LICENSE
C0039201	01/12/17	6:23:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0039378	01/21/17	2:25:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0039378	01/21/17	2:25:00 PM	Northwest Freeway SR E	18700	FAIL TO REPORT ADDRESS CHANGE
C0039680	02/03/17	7:21:00 AM	Northwest Freeway SR E	18700	EXPIRED MVR
C0040807	03/27/17	##########	Northwest Freeway SR E	18700	DISPLAY FICTITIOUS LICENSE PLATE
C0040807	03/27/17	##########	Northwest Freeway SR E	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042634	07/06/17	3:40:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0042634	07/06/17	3:40:00 PM	Northwest Freeway SR E	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043396	08/09/17	4:14:00 PM	Northwest Freeway SR E	18700	FAIL TO CONTROL SPEED
C0046249	01/10/18	9:10:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0046249	01/10/18	9:10:00 PM	Northwest Freeway SR E	18700	DRIVING WHILE LICENSE INVALID
C0046582	01/29/18	6:38:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0046667	02/01/18	6:00:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0046667	02/01/18	6:00:00 PM	Northwest Freeway SR E	18700	FAIL TO REPORT ADDRESS CHANGE
C0048337	05/08/18	7:14:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0048337	05/08/18	7:14:00 PM	Northwest Freeway SR E	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0048511	05/16/18	8:47:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0048914	06/15/18	5:36:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0048914	06/15/18	5:36:00 PM	Northwest Freeway SR E	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0048968	06/21/18	3:17:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0048968	06/21/18	3:17:00 PM	Northwest Freeway SR E	18700	NO DRIVER'S LICENSE
C0049052	06/28/18	4:00:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0049363	07/23/18	7:40:00 PM	Northwest Freeway SR E	18700	DRIVING WHILE LICENSE INVALID
C0049363	07/23/18	7:40:00 PM	Northwest Freeway SR E	18700	EXPIRED MVR
C0039231	01/13/17	6:46:00 PM	Northwest Freeway SR E	18787	EXPIRED MVR
C0039231	01/13/17	6:46:00 PM	Northwest Freeway SR E	18787	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0039231	01/13/17	6:46:00 PM	Northwest Freeway SR E	18787	NO LICENSE PLATE LIGHT

C0039231	01/13/17	6:46:00 PM	Northwest Freeway SR E	18787	NO DRIVER'S LICENSE
C0039860	02/12/17	1:24:00 AM	Northwest Freeway SR E	18787	EXPIRED MVR
C0039860	02/12/17	1:24:00 AM	Northwest Freeway SR E	18787	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042245	06/13/17	3:59:00 AM	Northwest Freeway SR E	18787	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045847	12/20/17	##########	Northwest Freeway SR E	18787	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045847	12/20/17	##########	Northwest Freeway SR E	18787	DRIVING WHILE LICENSE INVALID
C0045847	12/20/17	##########	Northwest Freeway SR E	18787	EXPIRED MVR
C0038977	01/03/17	##########	Northwest Freeway SR E	18800	EXPIRED MVR
C0039190	01/12/17	9:18:00 AM	Northwest Freeway SR E	18800	EXPIRED MVR
C0039939	02/16/17	8:44:00 PM	Northwest Freeway SR E	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0039939	02/16/17	8:44:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0039939	02/16/17	8:44:00 PM	Northwest Freeway SR E	18800	FAIL TO REPORT ADDRESS CHANGE
C0040676	03/21/17	##########	Northwest Freeway SR E	18800	EXPIRED MVR
C0042979	07/21/17	##########	Northwest Freeway SR E	18800	RAN STOP SIGN - INTERSECTION
C0042979	07/21/17	##########	Northwest Freeway SR E	18800	EXPIRED MVR
C0042979	07/21/17	##########	Northwest Freeway SR E	18800	NO DRIVER'S LICENSE
C0044085	09/22/17	4:34:00 PM	Northwest Freeway SR E	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0047601	03/30/18	6:56:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0047963	04/20/18	7:00:00 PM	Northwest Freeway SR E	18800	DEFECTIVE STOP LAMPS
C0047963	04/20/18	7:00:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0048596	05/22/18	4:41:00 PM	Northwest Freeway SR E	18800	DRIVING WHILE LICENSE INVALID
C0048596	05/22/18	4:41:00 PM	Northwest Freeway SR E	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0048596	05/22/18	4:41:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0049437	07/30/18	8:29:00 AM	Northwest Freeway SR E	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049437	07/30/18	8:29:00 AM	Northwest Freeway SR E	18800	DRIVING WHILE LICENSE INVALID
C0049437	07/30/18	8:29:00 AM	Northwest Freeway SR E	18800	EXPIRED MVR
C0049465	07/31/18	2:48:00 PM	Northwest Freeway SR E	18800	DRIVING WHILE LICENSE INVALID
C0049465	07/31/18	2:48:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0049465	07/31/18	2:48:00 PM	Northwest Freeway SR E	18800	FAIL TO REPORT ADDRESS CHANGE
C0049564	08/07/18	5:32:00 PM	Northwest Freeway SR E	18800	EXPIRED MVR
C0049719	08/17/18	3:16:00 PM	Northwest Freeway SR E	18800	RAN RED LIGHT - INTERSECTION
C0046430	01/22/18	9:04:00 PM	Northwest Freeway SR E	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046430	01/22/18	9:04:00 PM	Northwest Freeway SR E	18900	LICENSE PLATE OBSTRUCTED OR UNCLEAN
C0049183	07/11/18	##########	Northwest Freeway SR E	18900	IMPROPER PASSING - INSUFFICIENT CLEARANCE
C0049183	07/11/18	##########	Northwest Freeway SR E	18900	FAIL TO DISPLAY DRIVER'S LICENSE ON DEMAND
C0040158	02/26/17	12:24:00 PM	Northwest Freeway SR W	18600	EXPIRED MVR
C0043361	08/07/17	6:31:00 PM	Northwest Freeway SR W	18600	EXPIRED MVR

C0043361	08/07/17	6:31:00 PM	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043361	08/07/17	6:31:00 PM	Northwest Freeway SR W	18600	NO DRIVER'S LICENSE
C0043469	08/13/17	##########	Northwest Freeway SR W	18600	EXPIRED MVR
C0043469	08/13/17	##########	Northwest Freeway SR W	18600	NO DRIVER'S LICENSE
C0043469	08/13/17	##########	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043772	09/01/17	8:38:00 PM	Northwest Freeway SR W	18600	CHANGING LANES WITHOUT PROPER SIGNAL
C0043772	09/01/17	8:38:00 PM	Northwest Freeway SR W	18600	FAIL TO REPORT ADDRESS CHANGE
C0044944	11/05/17	12:08:00 PM	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY 2ND OFFENSE
C0044944	11/05/17	12:08:00 PM	Northwest Freeway SR W	18600	DRIVING WHILE LICENSE INVALID
C0045739	12/14/17	6:47:00 PM	Northwest Freeway SR W	18600	EXPIRED MVR
C0045739	12/14/17	6:47:00 PM	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046130	01/05/18	8:41:00 AM	Northwest Freeway SR W	18600	DRIVING WHILE LICENSE INVALID
C0046130	01/05/18	8:41:00 AM	Northwest Freeway SR W	18600	EXPIRED MVR
C0046137	01/05/18	##########	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY 2ND OFFENSE
C0046280	01/12/18	8:52:00 PM	Northwest Freeway SR W	18600	CHANGED LANE WHEN UNSAFE
C0046280	01/12/18	8:52:00 PM	Northwest Freeway SR W	18600	NO DRIVER'S LICENSE
C0047851	04/15/18	##########	Northwest Freeway SR W	18600	DEFECTIVE STOP LAMPS
C0047988	04/22/18	##########	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0047988	04/22/18	##########	Northwest Freeway SR W	18600	NO DRIVER'S LICENSE
C0049267	07/17/18	4:52:00 PM	Northwest Freeway SR W	18600	EXPIRED MVR
C0049267	07/17/18	4:52:00 PM	Northwest Freeway SR W	18600	FAIL TO REPORT ADDRESS CHANGE
C0049290	07/18/18	4:46:00 PM	Northwest Freeway SR W	18600	NO FRONT LICENSE PLATE
C0049290	07/18/18	4:46:00 PM	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049290	07/18/18	4:46:00 PM	Northwest Freeway SR W	18600	FAIL TO DISPLAY DRIVER'S LICENSE ON DEMAND
C0049443	07/30/18	##########	Northwest Freeway SR W	18600	DISPLAY FICTITIOUS LICENSE PLATE
C0049612	08/11/18	7:06:00 AM	Northwest Freeway SR W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049612	08/11/18	7:06:00 AM	Northwest Freeway SR W	18600	DRIVING WHILE LICENSE INVALID
C0049612	08/11/18	7:06:00 AM	Northwest Freeway SR W	18600	EXPIRED MVR
C0049666	08/14/18	9:38:00 AM	Northwest Freeway SR W	18600	DRIVING WHILE LICENSE INVALID
C0039461	01/25/17	2:23:00 PM	Northwest Freeway SR W	18670	FAIL TO CONTROL SPEED
C0040801	03/27/17	4:14:00 AM	Northwest Freeway SR W	18670	OPEN ALCOHOL BEVERAGE CONTAINER
C0042075	06/02/17	2:48:00 AM	Northwest Freeway SR W	18670	EXPIRED MVR
C0039071	01/08/17	##########	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0039595	01/31/17	1:42:00 AM	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0040262	03/02/17	5:44:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0040313	03/04/17	10:42:00 PM	Northwest Freeway SR W	18700	DEFECTIVE STOP LAMPS
C0040313	03/04/17	10:42:00 PM	Northwest Freeway SR W	18700	RAN RED LIGHT - INTERSECTION

C0040313	03/04/17	10:42:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0040342	03/06/17	11:56:00 PM	Northwest Freeway SR W	18700	FAIL TO CONTROL SPEED
C0040342	03/06/17	11:56:00 PM	Northwest Freeway SR W	18700	FAIL TO YIELD ROW - EMERGENCY VEHICLE
C0040342	03/06/17	11:56:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0040532	03/15/17	2:59:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0040532	03/15/17	2:59:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0040532	03/15/17	2:59:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0040593	03/17/17	7:38:00 AM	Northwest Freeway SR W	18700	DEFECTIVE PARKING LAMP(S)
C0040593	03/17/17	7:38:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0040593	03/17/17	7:38:00 AM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0040821	03/28/17	9:05:00 AM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0040821	03/28/17	9:05:00 AM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0040821	03/28/17	9:05:00 AM	Northwest Freeway SR W	18700	TURNED LEFT FROM WRONG LANE
C0041019	04/04/17	9:07:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0041172	04/12/17	2:34:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0041172	04/12/17	2:34:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0041174	04/12/17	2:48:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0041383	04/24/17	9:06:00 AM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0041384	04/24/17	9:33:00 AM	Northwest Freeway SR W	18700	TURNED LEFT FROM WRONG LANE
C0041441	04/28/17	##########	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042194	06/10/17	##########	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0042194	06/10/17	##########	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042430	06/23/17	7:27:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0042430	06/23/17	7:27:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042585	07/03/17	6:50:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0042585	07/03/17	6:50:00 PM	Northwest Freeway SR W	18700	FAIL TO DISPLAY DRIVER'S LICENSE ON DEMAND
C0042585	07/03/17	6:50:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042611	07/05/17	4:52:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0042648	07/07/17	9:12:00 AM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042652	07/07/17	##########	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0042652	07/07/17	##########	Northwest Freeway SR W	18700	FAIL TO DISPLAY DRIVER'S LICENSE ON DEMAND
C0042652	07/07/17	##########	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042652	07/07/17	##########	Northwest Freeway SR W	18700	EXPIRED MVR
C0042684	07/09/17	3:31:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0042684	07/09/17	3:31:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042684	07/09/17	3:31:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0043117	07/27/17	8:13:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR

C0043117	07/27/17	8:13:00 PM	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0043148	07/29/17	9:56:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0043393	08/09/17	3:31:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0043393	08/09/17	3:31:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043752	08/31/17	5:47:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0043752	08/31/17	5:47:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0044284	10/04/17	2:44:00 AM	Northwest Freeway SR W	18700	FAIL TO YIELD RIGHT OF WAY
C0044753	10/27/17	6:42:00 PM	Northwest Freeway SR W	18700	RAN RED LIGHT - INTERSECTION
C0045165	11/14/17	6:16:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045165	11/14/17	6:16:00 PM	Northwest Freeway SR W	18700	FAIL TO CONTROL SPEED
C0045304	11/20/17	3:50:00 PM	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0045304	11/20/17	3:50:00 PM	Northwest Freeway SR W	18700	CHANGED LANE WHEN UNSAFE
C0045305	11/20/17	3:58:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0045539	12/05/17	6:50:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045539	12/05/17	6:50:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045675	12/11/17	3:56:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045675	12/11/17	3:56:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045652	12/12/17	3:32:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045652	12/12/17	3:32:00 AM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045652	12/12/17	3:32:00 AM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0045705	12/13/17	5:15:00 PM	Northwest Freeway SR W	18700	LICENSE PLATE OBSTRUCTED OR UNCLEAN
C0045881	12/21/17	5:01:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045934	12/26/17	3:18:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045934	12/26/17	3:18:00 PM	Northwest Freeway SR W	18700	VIOLATE DL RESTRICTION - B
C0045982	12/28/17	7:58:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0045982	12/28/17	7:58:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045982	12/28/17	7:58:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0046073	01/02/18	6:59:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0046074	01/02/18	7:33:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0046782	02/08/18	4:21:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0046782	02/08/18	4:21:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046782	02/08/18	4:21:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0047198	03/03/18	8:05:00 PM	Northwest Freeway SR W	18700	NO LICENSE PLATE LIGHT
C0047756	04/10/18	8:19:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0047756	04/10/18	8:19:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0047863	04/16/18	8:55:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0047965	04/20/18	7:09:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR

C0047965	04/20/18	7:09:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0047965	04/20/18	7:09:00 PM	Northwest Freeway SR W	18700	FAIL TO REPORT ADDRESS CHANGE
C0047965	04/20/18	7:09:00 PM	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0048476	05/15/18	##########	Northwest Freeway SR W	18700	EXPIRED MVR
C0048578	05/21/18	9:02:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0048918	06/15/18	8:46:00 PM	Northwest Freeway SR W	18700	DISPLAY FICTITIOUS LICENSE PLATE
C0048918	06/15/18	8:46:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0048918	06/15/18	8:46:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0048918	06/15/18	8:46:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0048938	06/18/18	8:31:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0048973	06/21/18	7:37:00 PM	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0048973	06/21/18	7:37:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0048973	06/21/18	7:37:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049054	06/28/18	5:25:00 PM	Northwest Freeway SR W	18700	FAIL TO REPORT ADDRESS CHANGE
C0049054	06/28/18	5:25:00 PM	Northwest Freeway SR W	18700	VIOLATE DL RESTRICTION - B
C0049054	06/28/18	5:25:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0049166	07/10/18	9:01:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0049166	07/10/18	9:01:00 AM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049180	07/10/18	8:55:00 PM	Northwest Freeway SR W	18700	DISPLAY FICTITIOUS LICENSE PLATE
C0049180	07/10/18	8:55:00 PM	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049180	07/10/18	8:55:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0049235	07/16/18	##########	Northwest Freeway SR W	18700	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049235	07/16/18	##########	Northwest Freeway SR W	18700	DRIVING WHILE LICENSE INVALID
C0049279	07/18/18	8:47:00 AM	Northwest Freeway SR W	18700	RAN RED LIGHT
C0049452	07/30/18	7:34:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0049468	07/31/18	4:05:00 PM	Northwest Freeway SR W	18700	EXPIRED MVR
C0049683	08/15/18	4:05:00 PM	Northwest Freeway SR W	18700	NO DRIVER'S LICENSE
C0049683	08/15/18	4:05:00 PM	Northwest Freeway SR W	18700	NO REAR LICENSE PLATE
C0049792	08/22/18	8:46:00 AM	Northwest Freeway SR W	18700	EXPIRED MVR
C0040207	02/28/17	5:00:00 PM	Northwest Freeway SR W	18800	FAIL TO CONTROL SPEED
C0042568	07/02/17	5:32:00 PM	Northwest Freeway SR W	18800	RAN RED LIGHT - INTERSECTION
C0042568	07/02/17	5:32:00 PM	Northwest Freeway SR W	18800	NO DRIVER'S LICENSE
C0042673	07/08/17	7:15:00 PM	Northwest Freeway SR W	18800	OPEN ALCOHOL BEVERAGE CONTAINER
C0043019	07/22/17	6:26:00 PM	Northwest Freeway SR W	18800	EXPIRED MVR
C0043019	07/22/17	6:26:00 PM	Northwest Freeway SR W	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043617	08/19/17	8:36:00 PM	Northwest Freeway SR W	18800	DISPLAY FICTITIOUS LICENSE PLATE
C0043617	08/19/17	8:36:00 PM	Northwest Freeway SR W	18800	DRIVING WHILE LICENSE INVALID

C0043617	08/19/17	8:36:00 PM	Northwest Freeway SR W	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0044725	10/27/17	7:05:00 AM	Northwest Freeway SR W	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY 2ND OFFENSE
C0044725	10/27/17	7:05:00 AM	Northwest Freeway SR W	18800	DRIVING WHILE LICENSE INVALID
C0045844	12/19/17	6:43:00 PM	Northwest Freeway SR W	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045844	12/19/17	6:43:00 PM	Northwest Freeway SR W	18800	EXPIRED MVR
C0047583	03/29/18	6:23:00 PM	Northwest Freeway SR W	18800	UNAUTHORIZED GLASS COATING MATERIAL
C0049478	08/01/18	7:44:00 PM	Northwest Freeway SR W	18800	EXPIRED MVR
C0049478	08/01/18	7:44:00 PM	Northwest Freeway SR W	18800	FAIL TO REPORT ADDRESS CHANGE
C0039063	01/07/17	9:59:00 AM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0039063	01/07/17	9:59:00 AM	Northwest Freeway SR W	18900	EXPIRED MVR
C0039063	01/07/17	9:59:00 AM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0039362	01/21/17	3:58:00 AM	Northwest Freeway SR W	18900	DEFECTIVE TAIL LAMP
C0039362	01/21/17	3:58:00 AM	Northwest Freeway SR W	18900	EXPIRED MVR
C0039368	01/21/17	8:32:00 AM	Northwest Freeway SR W	18900	EXPIRED MVR
C0039781	02/08/17	9:11:00 PM	Northwest Freeway SR W	18900	DEFECTIVE STOP LAMPS
C0039781	02/08/17	9:11:00 PM	Northwest Freeway SR W	18900	EXPIRED OPERATOR'S LICENSE
C0040316	03/05/17	1:27:00 AM	Northwest Freeway SR W	18900	EXPIRED MVR
C0040316	03/05/17	1:27:00 AM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0040524	03/15/17	##########	Northwest Freeway SR W	18900	EXPIRED MVR
C0041021	04/05/17	##########	Northwest Freeway SR W	18900	DEFECTIVE STOP LAMPS
C0041021	04/05/17	##########	Northwest Freeway SR W	18900	EXPIRED MVR
C0041083	04/07/17	12:46:00 PM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0041083	04/07/17	12:46:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0041083	04/07/17	12:46:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0042002	05/26/17	8:24:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0042162	06/09/17	6:31:00 AM	Northwest Freeway SR W	18900	EXPIRED MVR
C0042162	06/09/17	6:31:00 AM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042166	06/09/17	##########	Northwest Freeway SR W	18900	EXPIRED MVR
C0042166	06/09/17	##########	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0042166	06/09/17	##########	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0042378	06/20/17	6:38:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0043027	07/22/17	9:16:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0043839	09/06/17	3:05:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0043839	09/06/17	3:05:00 PM	Northwest Freeway SR W	18900	NO DRIVER'S LICENSE
C0043839	09/06/17	3:05:00 PM	Northwest Freeway SR W	18900	DISPLAY FICTITIOUS LICENSE PLATE
C0044703	10/26/17	4:26:00 PM	Northwest Freeway SR W	18900	RAN RED LIGHT - INTERSECTION
C0045302	11/20/17	2:58:00 PM	Northwest Freeway SR W	18900	RAN RED LIGHT - INTERSECTION

C0045552	12/06/17	5:38:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0045670	12/12/17	12:31:00 PM	Northwest Freeway SR W	18900	RAN RED LIGHT
C0045670	12/12/17	12:31:00 PM	Northwest Freeway SR W	18900	USE WIRELESS DEVICE TO READ, WRITE OR SEND ELECTRONIC M
C0045937	12/26/17	4:15:00 PM	Northwest Freeway SR W	18900	CUT ACROSS DRIVEWAY TO MAKE TURN
C0045937	12/26/17	4:15:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0045937	12/26/17	4:15:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0046067	01/02/18	3:44:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046067	01/02/18	3:44:00 PM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0046067	01/02/18	3:44:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0046115	01/04/18	5:49:00 PM	Northwest Freeway SR W	18900	NO REAR LICENSE PLATE
C0046806	02/09/18	9:09:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0046806	02/09/18	9:09:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046806	02/09/18	9:09:00 PM	Northwest Freeway SR W	18900	NO DRIVER'S LICENSE
C0047164	03/02/18	8:37:00 PM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0047164	03/02/18	8:37:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0047405	03/16/18	8:51:00 PM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0047405	03/16/18	8:51:00 PM	Northwest Freeway SR W	18900	LICENSE PLATE OBSTRUCTED OR UNCLEAN
C0047490	03/21/18	6:34:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0048257	05/04/18	5:40:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0048257	05/04/18	5:40:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0048730	05/29/18	6:31:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0048807	06/05/18	11:56:00 PM	Northwest Freeway SR W	18900	DRIVING WHILE LICENSE INVALID
C0048807	06/05/18	11:56:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0048980	06/22/18	8:34:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0048980	06/22/18	8:34:00 PM	Northwest Freeway SR W	18900	NO DRIVER'S LICENSE
C0049061	06/29/18	2:58:00 PM	Northwest Freeway SR W	18900	RAN RED LIGHT - INTERSECTION
C0049107	07/03/18	7:26:00 PM	Northwest Freeway SR W	18900	EXPIRED OPERATOR'S LICENSE
C0049107	07/03/18	7:26:00 PM	Northwest Freeway SR W	18900	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0049107	07/03/18	7:26:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0049194	07/12/18	3:41:00 PM	Northwest Freeway SR W	18900	FAIL TO CONTROL SPEED
C0049194	07/12/18	3:41:00 PM	Northwest Freeway SR W	18900	FAIL TO REPORT ADDRESS CHANGE
C0049241	07/16/18	4:02:00 PM	Northwest Freeway SR W	18900	EXPIRED MVR
C0049714	08/17/18	9:46:00 AM	Northwest Freeway SR W	18900	DEFECTIVE STOP LAMPS
C0039712	02/04/17	##########	Northwest Freeway W	18600	SPEEDING 10% OR MORE OVER THE LIMIT
C0039712	02/04/17	##########	Northwest Freeway W	18600	FAIL TO DISPLAY DRIVER'S LICENSE ON DEMAND
C0042246	06/13/17	5:20:00 AM	Northwest Freeway W	18600	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY 2ND OFFENSE
C0042246	06/13/17	5:20:00 AM	Northwest Freeway W	18600	DRIVING WHILE LICENSE INVALID

C0042407	06/22/17	12:26:00 PM	Northwest Freeway W	18800	DRIVING WHILE LICENSE INVALID
C0042407	06/22/17	12:26:00 PM	Northwest Freeway W	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY 2ND OFFENSE
C0047032	02/23/18	2:54:00 PM	Northwest Freeway W	18800	FAIL TO CONTROL SPEED
C0042686	07/09/17	4:46:00 PM	NORTHWEST FWY E SR	18700	NO SEAT BELT-CHILD 4-14
C0042686	07/09/17	4:46:00 PM	NORTHWEST FWY E SR	18700	NO FRONT LICENSE PLATE
C0042686	07/09/17	4:46:00 PM	NORTHWEST FWY E SR	18700	RAN RED LIGHT - INTERSECTION
C0042843	07/15/17	8:58:00 PM	NORTHWEST W SR	18800	FAIL TO MAINTAIN FINANCIAL RESPONSIBILITY
C0046049	01/01/18	6:28:00 PM	NW Frwy SR East	18700	EXPIRED MVR
C0046163	01/06/18	3:59:00 PM	NW Frwy SR West	18700	NO DRIVER'S LICENSE

APPENDIX C

TRAFFIC VOLUMES

GRAM Traffic Counting, Inc
1506 Festival
Houston, Texas 77062
888-316-6141

Site Code: 1 SB
Station ID: 1602
West Rd north of US 290 frontage
Jersey Village, Texas
Latitude: 0' 0.0000 Undefined

Start Time	02-Oct-18 Tue	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		16	119		
12:15		12	138		
12:30		16	104		
12:45		8	134	52	495
01:00		11	161		
01:15		4	137		
01:30		5	163		
01:45		7	187	27	648
02:00		14	130		
02:15		6	153		
02:30		12	103		
02:45		4	163	36	549
03:00		7	156		
03:15		9	165		
03:30		7	125		
03:45		11	167	34	613
04:00		8	124		
04:15		15	157		
04:30		31	159		
04:45		43	160	97	600
05:00		52	154		
05:15		60	159		
05:30		74	158		
05:45		122	174	308	645
06:00		131	160		
06:15		163	156		
06:30		155	157		
06:45		142	134	591	607
07:00		153	119		
07:15		158	117		
07:30		162	99		
07:45		158	94	631	429
08:00		151	91		
08:15		160	94		
08:30		149	103		
08:45		125	72	585	360
09:00		154	71		
09:15		130	81		
09:30		125	61		
09:45		136	47	545	260
10:00		120	66		
10:15		101	36		
10:30		121	28		
10:45		129	23	471	153
11:00		104	39		
11:15		134	26		
11:30		108	17		
11:45		121	24	467	106
Total		3844	5465		
Percent		41.3%	58.7%		
Grand Total		3844	5465		
Percent		41.3%	58.7%		
ADT		ADT 9,328		AADT 9,328	

GRAM Traffic Counting, Inc
1506 Festival
Houston, Texas 77062
888-316-6141

Site Code: 2 EB
Station ID: 1609
US 290 Service Rd east of West road
Jersey Village, Texas
Latitude: 0' 0.0000 Undefined

Start Time	02-Oct-18 Tue	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		21	270		
12:15		26	284		
12:30		10	254		
12:45		11	274	68	1082
01:00		19	276		
01:15		15	259		
01:30		20	273		
01:45		12	248	66	1056
02:00		19	232		
02:15		10	252		
02:30		11	232		
02:45		13	199	53	915
03:00		20	235		
03:15		29	262		
03:30		26	228		
03:45		21	188	96	913
04:00		23	255		
04:15		52	173		
04:30		81	190		
04:45		89	196	245	814
05:00		128	182		
05:15		168	212		
05:30		277	210		
05:45		335	171	908	775
06:00		327	190		
06:15		401	175		
06:30		452	192		
06:45		495	192	1675	749
07:00		483	189		
07:15		470	150		
07:30		507	127		
07:45		496	110	1956	576
08:00		486	80		
08:15		447	91		
08:30		401	81		
08:45		399	78	1733	330
09:00		387	104		
09:15		339	74		
09:30		289	42		
09:45		267	62	1282	282
10:00		248	56		
10:15		255	37		
10:30		256	33		
10:45		263	31	1022	157
11:00		258	33		
11:15		283	28		
11:30		259	17		
11:45		227	11	1027	89
Total		10131	7738		
Percent		56.7%	43.3%		
Grand Total		10131	7738		
Percent		56.7%	43.3%		
ADT		ADT 17,869		AADT 17,869	

GRAM Traffic Counting, Inc
1506 Festival
Houston, Texas 77062
888-316-6141

Site Code: 4
Station ID: 1615
US 290 frontage east of Jones Road
Jersey Village, Texas
Latitude: 0' 0.0000 Undefined

Start Time	02-Oct-18 Tue	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon
12:00		73	297		
12:15		59	311		
12:30		53	287		
12:45		50	317	235	1212
01:00		34	306		
01:15		35	323		
01:30		38	310		
01:45		42	260	149	1199
02:00		35	289		
02:15		36	284		
02:30		40	279		
02:45		24	425	135	1277
03:00		18	393		
03:15		33	366		
03:30		36	358		
03:45		30	399	117	1516
04:00		25	350		
04:15		35	354		
04:30		50	352		
04:45		63	357	173	1413
05:00		65	377		
05:15		122	287		
05:30		180	336		
05:45		290	314	657	1314
06:00		175	338		
06:15		208	362		
06:30		232	379		
06:45		226	427	841	1506
07:00		207	441		
07:15		244	303		
07:30		272	275		
07:45		277	251	1000	1270
08:00		237	226		
08:15		234	208		
08:30		239	201		
08:45		243	197	953	832
09:00		237	179		
09:15		233	166		
09:30		263	179		
09:45		270	120	1003	644
10:00		234	118		
10:15		255	108		
10:30		244	117		
10:45		270	83	1003	426
11:00		271	87		
11:15		283	89		
11:30		318	77		
11:45		317	61	1189	314
Total		7455	12923		
Percent		36.6%	63.4%		
Grand Total		7455	12923		
Percent		36.6%	63.4%		
ADT		ADT 19,067		AADT 19,067	

APPENDIX D

SIGNAL TIMING DATA

INSTALLED 8-21-2018

SEPAC ECOM All Data

Intersection Name: **US 290 at West**

Intersection Alias: **290/Westrd**

Access Data

1 :**1200/1312 Baud**
3 :**9600 Baud**

Access Code: **9999**

Channel: 1

Address: **5**

Revision: **3.34f**

IP Address:

Phase Initialization Data

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Initial	1-Inact	4-Grn	5-Dark	1-Inact	4-Grn	1-Inact	5-Dark	1-Inact	1-Inact	1-Inact	1-Inact	1-Inact	1-Inact	1-Inact	1-Inact	1-Inact

PHASE DATA

	Vehical Basic Timings						Misc Timings					Pedestrian Timings						
Phase	Min Green	Passage	Max1	Max2	Yellow	All Red	Green Delay	Yellow Delay	Walk Off	Walk Offset Mode	Bike Green	Walk	Ped Clr	Alt Walk	Alt Ped Clr	Flash Walk	Ext Ped Clr	Actuated Rest in Walk
1	5	2.0	30	30	4.0	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
2	5	2.0	40	45	4.5	1.5	0	0	0	0-Advance	0	7	12	0	0	No	2	No
3	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
4	10	3.0	55	70	4.5	1.5	0	0	0	0-Advance	0	7	12	0	0	No	2	No
5	5	2.0	20	20	4.0	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
6	5	2.0	40	45	4.5	1.5	0	0	0	0-Advance	0	5	12	0	0	No	2	No
7	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
8	5	1.0	50	55	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	2	No
9	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
10	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
11	0	0.0	0	0	3.5	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
12	2	2.0	2	2	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No
13	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
14	0	0.0	0	0	4.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
15	0	0.0	0	0	3.0	0.0	0	0	0	0-Advance	0	0	0	0	0	No	0	No
16	2	2.0	2	2	4.5	1.5	0	0	0	0-Advance	0	0	0	0	0	No	0	No

Vehicle Density Timings							General Control				Miscellaneous					Special Sequence		
Ph.	Added Initial	Max Initial	Time B4 Redu	Car B4 Redu	Time To Redu	Min Gap	Non-Act Response	Veh Recall	Ped Recall	Recall Delay	Non Lock	Dual Entry	Last Car Pass	Condit Service	No Simu Gap Out	Omit	Minus Yel	Omit Call
1	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
2	0.0	0	0	0	0	0.0	None	Min	None	0	Yes	No	No	No	No	0	0	0
3	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	0	0	0
4	0.0	0	0	0	0	0.0	None	Min	None	0	Yes	No	No	No	No	0	0	0
5	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
6	0.0	0	0	0	0	0.0	None	Min	None	0	Yes	No	No	No	No	0	0	0
7	0.0	0	0	0	0	0.0	None	None	None	0	Yes	No	No	No	No	0	0	0
8	0.0	0	0	0	0	0.0	None	Min	None	0	Yes	No	No	No	No	0	0	0
9	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
10	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
11	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
12	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
13	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
14	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
15	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0
16	0.0	0	0	0	0	0.0	None	None	None	0	Yes	Yes	No	No	No	0	0	0

Vehical Detector Phase Assignment

	Assign Phase	Mode	Switch Phase	Extend	Delay
Veh Det:21	4	Veh	0	0.0	0
Veh Det:22	8	Veh	0	0.0	0

Pedestrian Detector

Default Data

Special Detector Phase Assignment

	Assign Phase	Mode	Switch Phase	Extend	Delay
:					

Default Data

Unit Data

General Control

Startup Time: 5sec
Startup State: All Red
Red Revert: 20sec
Auto Ped Clr: Yes
Stop T Reset: No
Alt Sequence: 16
Special Seq: 0-Standard

Ring	Input Respons	Output Selection
1	Ring 1	Ring 1
2	Ring 2	Ring 2
3	None	None
4	None	None

I/O Modes:
ABC Input(Entry) Modes: 0
D Input(Entry) Modes: 0
ABC Output(O/STS) Modes: 0
D Output(O/STS) Modes: 0

Remote Flash

Test A = Flash

Phase	Entry	Exit

Default Data - No l

Channel	Flash Color	Flash Alternat

Default Data - No Flash

Overlaps

Overlaps

Phase(s)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
	1	5							1	3	4	5	7	8		
	2	6							9	11	12	13	15	16		
	9	13							10			14				
	10	14														

Start Green

Overlaps

Phase(s)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trail Yellow	4.0	4.0	3.5	3.5	3.5	3.5	3.5	3.5	4.0	4.0	5.0	4.0	4.0	5.0	3.5	3.5
Trail Red	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
TG Preempt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stop Grn/Yel Phase	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ring

Phase	Ring	Next Phase
1	1	2
2	1	3
4	1	9
5	2	6
6	2	7
8	2	13
12	1	1
16	2	5

Phase(s)

Concurrent Phases	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	1	2	3	4	1	1	3	3	9	10	11	12	9	9	11	11
	5	5	7	7	2	2	4	4	13	13	15	15	10	10	12	12
	6	6	8	8	5	6	7	8	14	14	16	16	13	14	15	16

Alternate Sequences

No Alternate Sequences Programmed

Port 1 Data

BIU Addr	Port Status	Basic Det	Message 40
0	Used	No	No
1	Used	No	No
8	Used	No	No
9	Used	No	No
16	Used	No	No
18	Used	No	No

Channel	Control	Hardware Pins
1	41 - Overlap I	1 - Phase 1 RYG
2	2 - Veh Phase 2	2 - Phase 2 RYG
3	42 - Overlap J	3 - Phase 3 RYG
4	43 - Overlap K	4 - Phase 4 RYG
5	44 - Overlap L	5 - Phase 5 RYG
6	6 - Veh Phase 6	6 - Phase 6 RYG
7	45 - Overlap M	7 - Phase 7 RYG
8	46 - Overlap N	8 - Phase 8 RYG
9	33 - Overlap A	17 - Overlap A RYG
10	34 - Overlap B	18 - Overlap B RYG
11	35 - Overlap C	19 - Overlap C RYG
12	36 - Overlap D	20 - Overlap D RYG
13	18 - Ped Phase 2	10 - Phase 2 DPW
14	20 - Ped Phase 4	12 - Phase 4 DPW
15	22 - Ped Phase 6	14 - Phase 6 DPW
16	24 - Ped Phase 8	16 - Phase 8 DPW
17	17 - Ped Phase 1	9 - Phase 1 DPW
18	19 - Ped Phase 3	11 - Phase 3 DPW
19	21 - Ped Phase 5	13 - Phase 5 DPW
20	23 - Ped Phase 7	15 - Phase 7 DPW

Coordination Data

Dial/Split	Cycle
2/1	135
3/1	135

General Coordination Dat

Operation Mode: 1=Auto
Coordination Mode: 0=Permissive
Maximun Mode: 1=Max 1
Correction Mode: 2=Short Way
Offset Mode: 0=Beg Grn
Force Mode: 0=Plan
Max Dwell Time: 0
Yield Period: 0
Manual Dial: 2
Manual Split: 1
Manual Offset: 1

Split Times and Phase Mod

Dial 2 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	50	1=Coordinate	2	29	0=Actuated	4	26	0=Actuated	5	35	0=Actuated
6	41	1=Coordinate	8	39	0=Actuated	12	8	0=Actuated	16	8	0=Actuated

Dial 3 / **Split** 1

Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode	Ph.	Splits	Ph. Mode
1	30	0=Actuated	2	43	0=Actuated	4	50	1=Coordinate	5	50	1=Coordinate
6	28	0=Actuated	8	14	0=Actuated	12	8	0=Actuated	16	8	0=Actuated

Traffic Plan Data

Plan: 2/1/1	Offset Time: 128	Alternat Sequence: 0	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 0=Normal	Special Function: 0	Correction Mode: 0=No		
Plan: 3/1/1	Offset Time: 100	Alternat Sequence: 0	Rg 2 Lag Time: 0	Rg 3 Lag Time: 0	Rg 4 Lag Time: 0
	Mode: 0=Normal	Special Function: 0	Correction Mode: 0=No		

Local TBC Data

Start of Daylight Saving Month: 3 Week: 2 Cycle Zero ReferenceHours: 24 Min: 0
End of Daylight Saving Month: 11 Week: 1

Source Day	Equate Days 1	2	3	4	5	6	7
1	7	0	0	0	0	0	0
2	3	4	5	6	0	0	0

Traffic Data

Event	Day	Time	D/S/O	flash	PHASE FUNCTION 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	0:1	0/0/4																	
2	2	0:1	0/0/4																	
3	2	6:0	2/1/1																	
4	2	9:0	0/0/0					X												
5	2	16:0	3/1/1																	
6	2	19:0	0/0/4																	

AUX. Events

Event	Program Day	Hour	Min.	Aux Ouputs 1	2	3	Det. Diag. D1	Det. Rpt. D2	Det. Mult100 D3	Dimming	Special Function Outputs 1	2	3	4	5	6	7	8

Default Data - No Special Day(s) or Week(s) Programmed

Special Functions

Function	SF1	SF2	SF3	SF4	SF5	SF6	SF7	SF8	SF9	SF10	SF11	SF12	SF13	SF14	SF15	SF16
Special Function 1	X															
Special Function 2		X														
Special Function 3			X													
Special Function 4				X												
Special Function 5					X											
Special Function 6						X										
Special Function 7							X									
Special Function 8								X								

Phase Function

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 4 Max2				X												

Function Phase Recall

	PF1	PF2	PF3	PF4	PF5	PF6	PF7	PF8	PF9	PF10	PF11	PF12	PF13	PF14	PF15	PF16
Phase 8 Max Recall								X								

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF1(

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF1(

Vehicle Function

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF1(

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF16

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF16

Overlap Function

PF1 PF2 PF3 PF4 PF5 PF6 PF7 PF8 PF9 PF10 PF11 PF12 PF13 PF14 PF15 PF1(

Dimming Data

Channel	Red	Yellow	Green	Alternate
	☐	☐	☐	☐

Default Data - No Dimming Programmed

Preemption Data

General Preemption Dat

Ring	Min Grn/Walk Time
1	5
2	5
3	5
4	5

Flash > Preepmt 1 Preepmt 2 = Preempt 3 Preepmt 4 = Preempt 5
Preepmt 1 > Preempt 2 Preepmt 3 = Preempt 4 Preepmt 5 = Preempt 6

Preempt Timers

Preempt	Non-Locking	Link to Preempt	Delay	Extend	Duration	Max Call	Lock-Out	Min Green	Min Walk	Select: Ped Clear	Select: Yel	Select: Red	Track: Grn	Track: Ped	Track: Yel	Track: Red	Dwell Green	Return: Ped Clear	Return: Yel	Return: Red
1	Yes	0	1	0	10	0	0	0	0	8	45	20	25	30	45	20	10	30	45	20
2	No	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
3	No	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
4	No	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
5	No	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20
6	No	0	0	0	0	0	0	0	0	8	40	20	10	8	40	20	10	8	40	20

Preempt 1			Preempt 2			Preempt 3			Preempt 4			Preempt 5			Preempt 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls
1	Yes	No															
6	Yes	No															

Priority Timers

Priority	Non-Locking	Delay	Extend	Duration	Dwell	Max_Call	Lock-Out	Skip Phases
1	No	0	0	0	0	0	0	0=Do not Skip Phases
2	No	0	0	0	0	0	0	0=Do not Skip Phases
3	No	0	0	0	0	0	0	0=Do not Skip Phases
4	No	0	0	0	0	0	0	0=Do not Skip Phases
5	No	0	0	0	0	0	0	0=Do not Skip Phases
6	No	0	0	0	0	0	0	0=Do not Skip Phases

Priority 1			Priority 2			Priority 3			Priority 4			Priority 5			Priority 6		
Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls	Phase	Exit Phase	Exit Calls

Preempt 1

Vehical Phases

Ph.	Track	Dwell	Cycle
1	Green	Green	Actuated
4	Red	Red	Min Recall
5	Red	Red	Actuated
6	Green	Red	No
8	Red	Red	Min Recall

Pedestrian Phases

Ph	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp	Track	Dwell	Cycle
J	Red	Red	Actuated
K	Red	Red	Actuated
L	Red	Red	Actuated
M	Red	Red	Actuated
N	Red	Red	Actuated
A	Green	Red	Actuated
I	Green	Red	Actuated

Preempt 2

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 3

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 4

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 5

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

Preempt 6

Vehical Phases

Ph.	Track	Dwell	Cycle

Default Data

Pedestrian Phases

Ph.	Track	Dwell	Cycle

Default Data

Overlaps

Ovlp.	Track	Dwell	Cycle

Default Data

System/Detectors Data

Local Critical Alarms

Revert to Backup: 15

1st Phone:

2nd Phone:

Local Free: No Cycle Failure: No Coord Failure: No Conflict Flash: No Remote Flash: No

Local Fash: No Cycle Fault: No Coord Fault: No Premption: No Voltage Monitor: No

Special Status 1: No Special Status 2: No Special Status 3: No Special Status 4: No Special Status 5: No Special Status 6: No

Traffic Responsive

System Detector	Detector Channel	Veh/Hr	Average Time(mins)	Occupancy Correction/10	Min Volume %	Queue 1 Detectors	System Detectors	Weight Factor	Queue 2 Detectors	System Detectors	Weight Factor

Default Data

Sample Interval:

Default Data

Queue: 1 Input Selection: 0=Average

Detector Failed Level : 0

Queue: 2 Input Selection: 0=Average

Detector Failed Level : 0

Default Data

Queue:

Level	Enter	Leave	Dial / Split / Offset
			/ /

Default Data

Vehical Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Vehical Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Special Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Default Data - Diag 0 Values

Default Data - No Diag 1 Values

Default Data - No Diag 0 Valu

Pedestrian Detector

Diagnostic Value 0

Detector	Max Presence	No Activity	Erratic Count

Pedestrian Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Special Detector

Diagnostic Value 1

Detector	Max Presence	No Activity	Erratic Count

Default Data - No Diag 0 Values

Default Data - No Diag 1 Values

Default Data - No Diag 1 Values

Speed Trap Data

Speed Trap:

Measurement:

Detector 1 Detector_2 Distance :

Speed Trap Low Treshold	Speed Trap High Treshold

Dial/Split/Offset

//

Default Data

Default Data

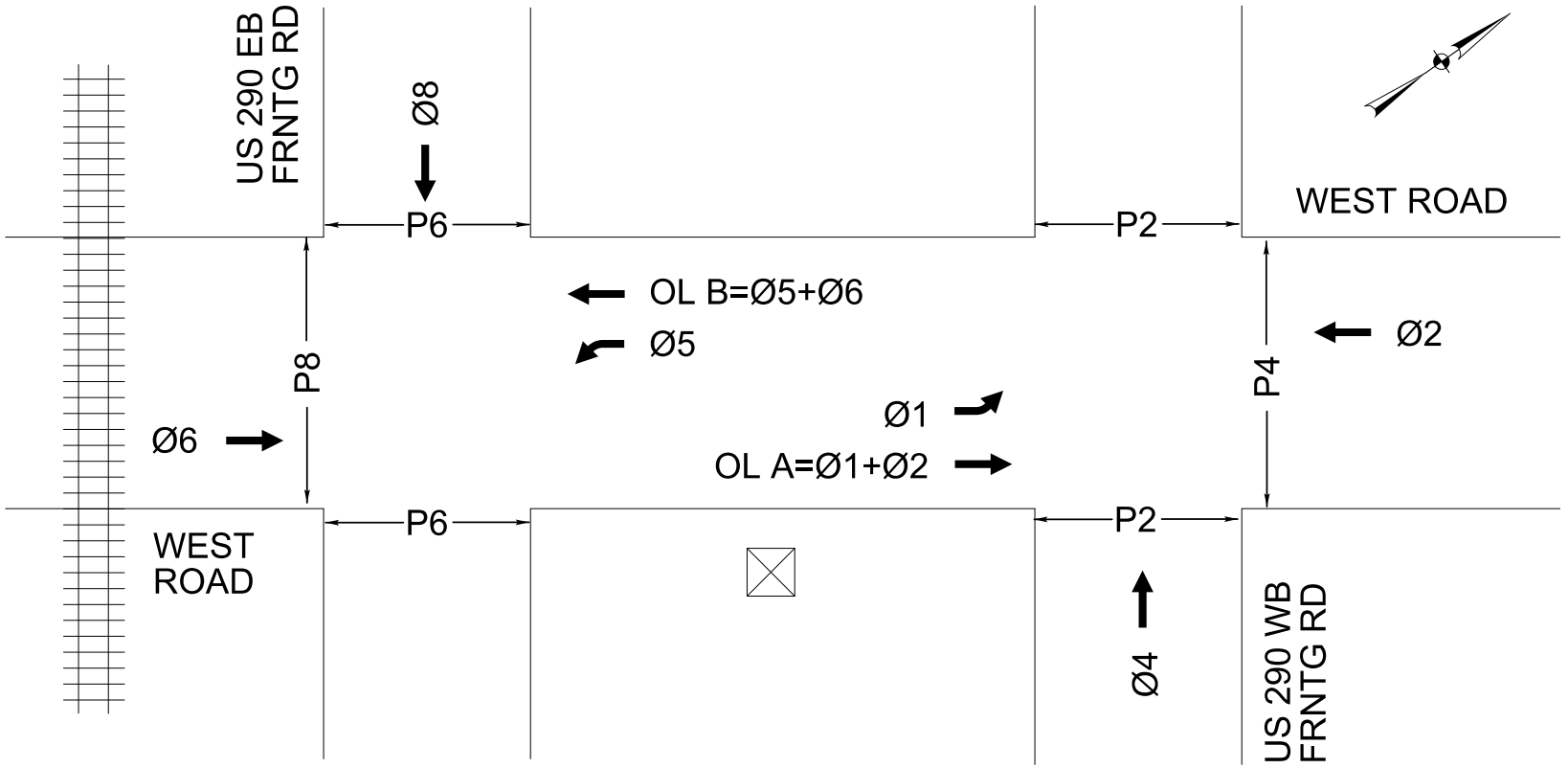
Volume Detector Data

Report Interval 0

Volume Detector Number

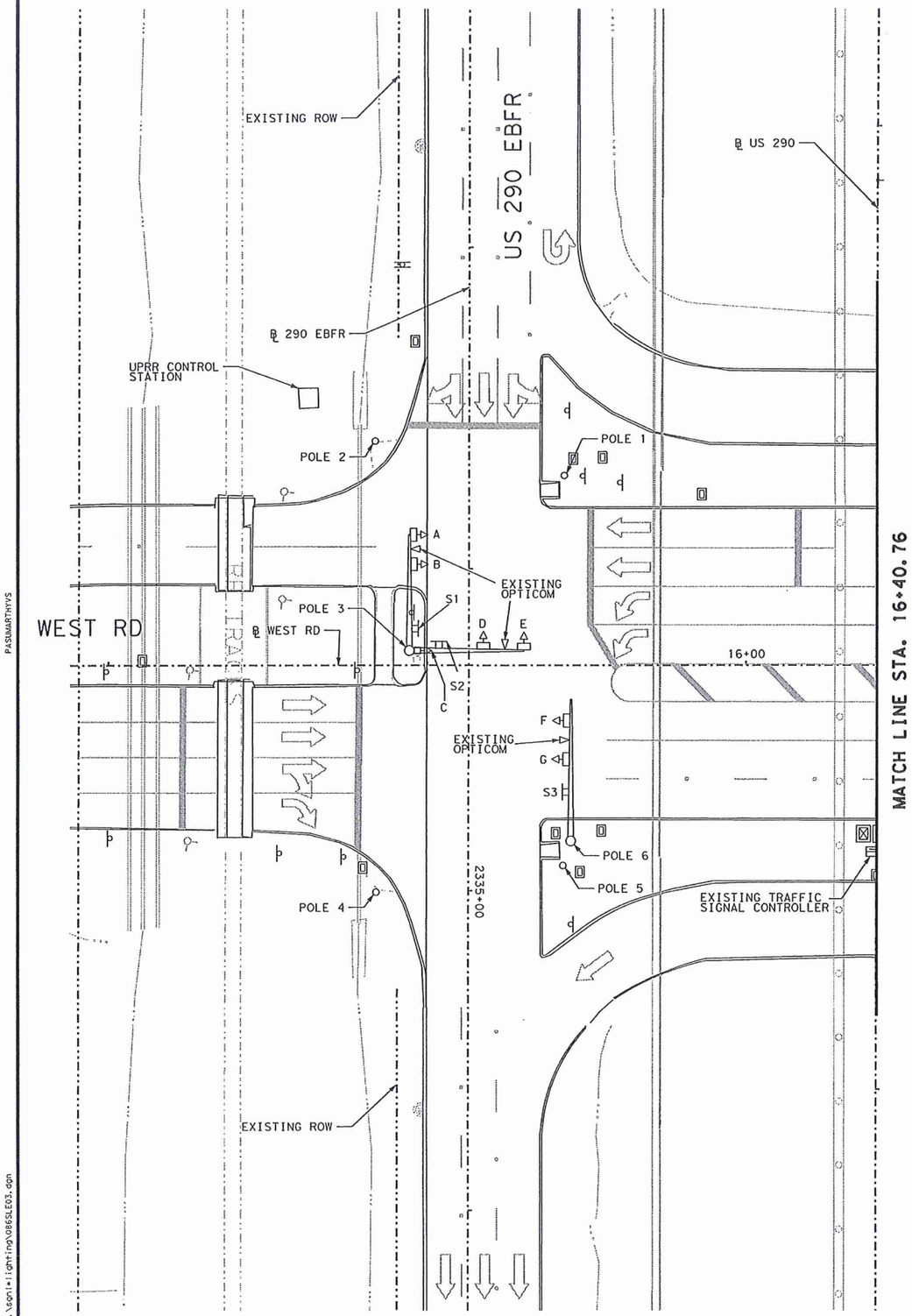
Controller Detector Channel

Default Data

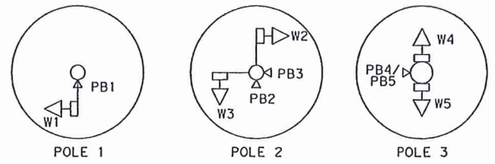

US 290 EB
FRNTG RD
Ø8
P6
P2
WEST ROAD
OL B=Ø5+Ø6
Ø5
P8
P4
Ø2
Ø1
Ø6
OL A=Ø1+Ø2
P6
P2
WEST
ROAD
Ø4
US 290 WB
FRNTG RD

APPENDIX E

SIGNAL PLANS



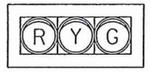
EXISTING PEDESTRIAN DETAILS:



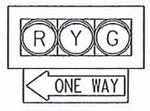
LEGEND:

- EXISTING CONTROLLER WITH CABINET
- EXISTING CONDUIT
- EXISTING BORE CONDUIT
- EXISTING GROUND BOX TYPE D WITH APRON
- EXISTING GROUND BOX TYPE 2 WITH APRON
- EXISTING HORIZONTAL TRAFFIC SIGNAL HEAD
- EXISTING VERTICAL TRAFFIC SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING VIVDS DETECTOR
- EXISTING MAST ARM AND POLE
- EXISTING STRAIN POLE
- EXISTING PEDESTAL POLE
- EXISTING ELECTRICAL SERVICE
- EXISTING LUMINAIRE WITH 10' ARM
- EXISTING SMALL SIGN
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING GROUND MOUNTED SIGN
- EXISTING OPTICOM DETECTOR

EXISTING SIGNALS TO BE REMOVED



B, D, E, F



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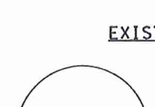

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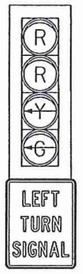


C

EXISTING MAST ARM MOUNTED SIGNS TO BE REMOVED

S1, S3 — US 290

S2 — West Rd

EXISTING PED SIGNS TO BE REMOVED

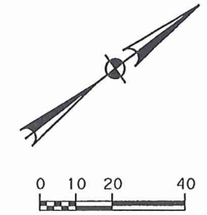
R10-4b(R)
PB2, PB6, PB8

R10-4b(L)
PB1, PB3, PB7

R10-4b
PB4/PB5

EXISTING PED SIGNALS TO BE REMOVED

12" PEDESTRIAN SIGNAL HEADS
(W1 THRU W8)



NOTES:

1. PAVEMENT STRIPING IS SHOWN FOR REFERENCE ONLY.
2. POLES 1, 2, 3, 4, 5, 6 TO BE REMOVED AFTER THE TEMPORARY SIGNAL IS OPERATIONAL.
3. MAINTAIN THE EXISTING SIGNAL INSTALLATION UNTIL THE TEMPORARY SIGNAL INSTALLATION IS OPERATIONAL.

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on NOV. 15, 2012

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

Texas Department of Transportation
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US 290

EXISTING TRAFFIC SIGNAL
LAYOUT US 290 AT WEST RD

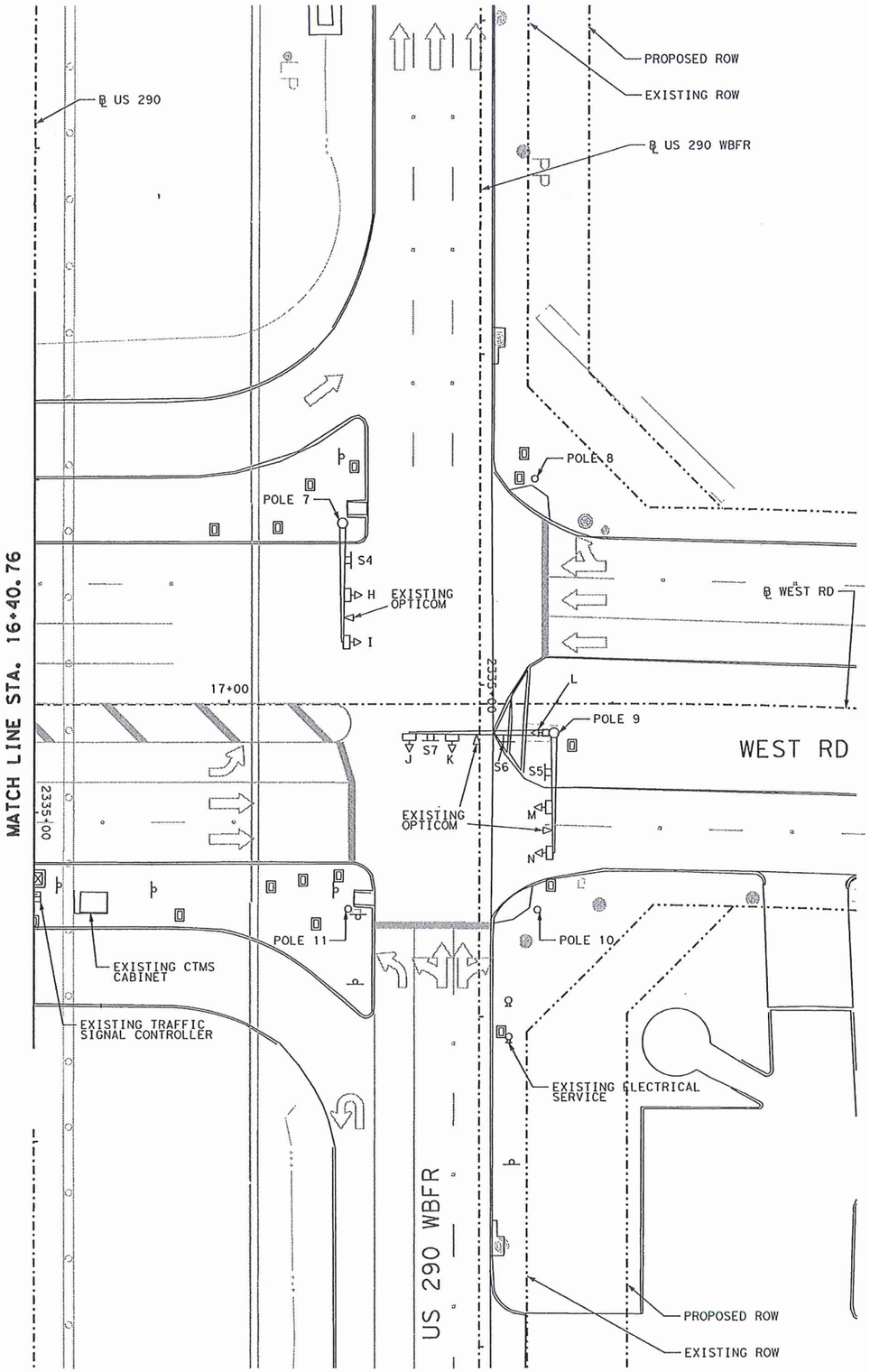
SHEET 1 OF 2

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1060

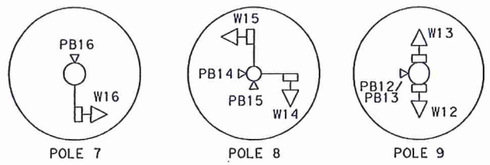
PASUMARTHYVS

11/12/2012 11:01:45 PM
...\sgnl*lighting\086SLE03.dgn

086SLE03.dgn



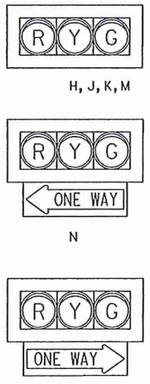
EXISTING PEDESTRIAN DETAILS:



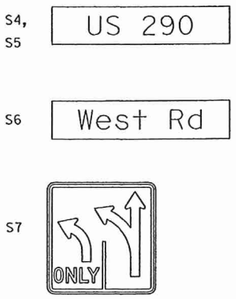
LEGEND:

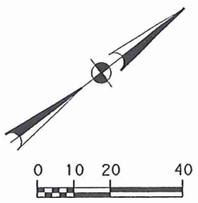
- EXISTING CONTROLLER WITH CABINET
- EXISTING CONDUIT
- EXISTING BORE CONDUIT
- EXISTING GROUND BOX TYPE D WITH APRON
- EXISTING GROUND BOX TYPE 2 WITH APRON
- EXISTING HORIZONTAL TRAFFIC SIGNAL HEAD
- EXISTING VERTICAL TRAFFIC SIGNAL HEAD
- EXISTING PEDESTRIAN SIGNAL HEAD
- EXISTING VIVDS DETECTOR
- EXISTING MAST ARM AND POLE
- EXISTING STRAIN POLE
- EXISTING PEDESTAL POLE
- EXISTING ELECTRICAL SERVICE
- EXISTING LUMINAIRE WITH 10' ARM
- EXISTING SMALL SIGN
- EXISTING PEDESTRIAN PUSH BUTTON
- EXISTING GROUND MOUNTED SIGN
- EXISTING OPTICOM DETECTOR

EXISTING SIGNALS TO BE REMOVED



EXISTING MAST ARM MOUNTED SIGNS TO BE REMOVED





EXISTING PED SIGNALS TO BE REMOVED

12" PEDESTRIAN SIGNAL HEADS (W9 THRU W16)

EXISTING PED SIGNS TO BE REMOVED

R10-4b(R) PB10, PB14

R10-4b(L) PB9, PB11, PB15, PB16

R10-4b PB12/PB13

NOTES:

1. PAVEMENT STRIPING IS SHOWN FOR REFERENCE ONLY.
2. POLES 7, 8, 9, 10 AND 11 TO BE REMOVED AFTER THE TEMPORARY SIGNAL IS OPERATIONAL.
3. MAINTAIN THE EXISTING SIGNAL INSTALLATION UNTIL THE TEMPORARY SIGNAL INSTALLATION IS OPERATIONAL.

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on NOV. 15, 2012

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

Texas Department of Transportation
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US 290

EXISTING TRAFFIC SIGNAL LAYOUT US 290 AT WEST RD

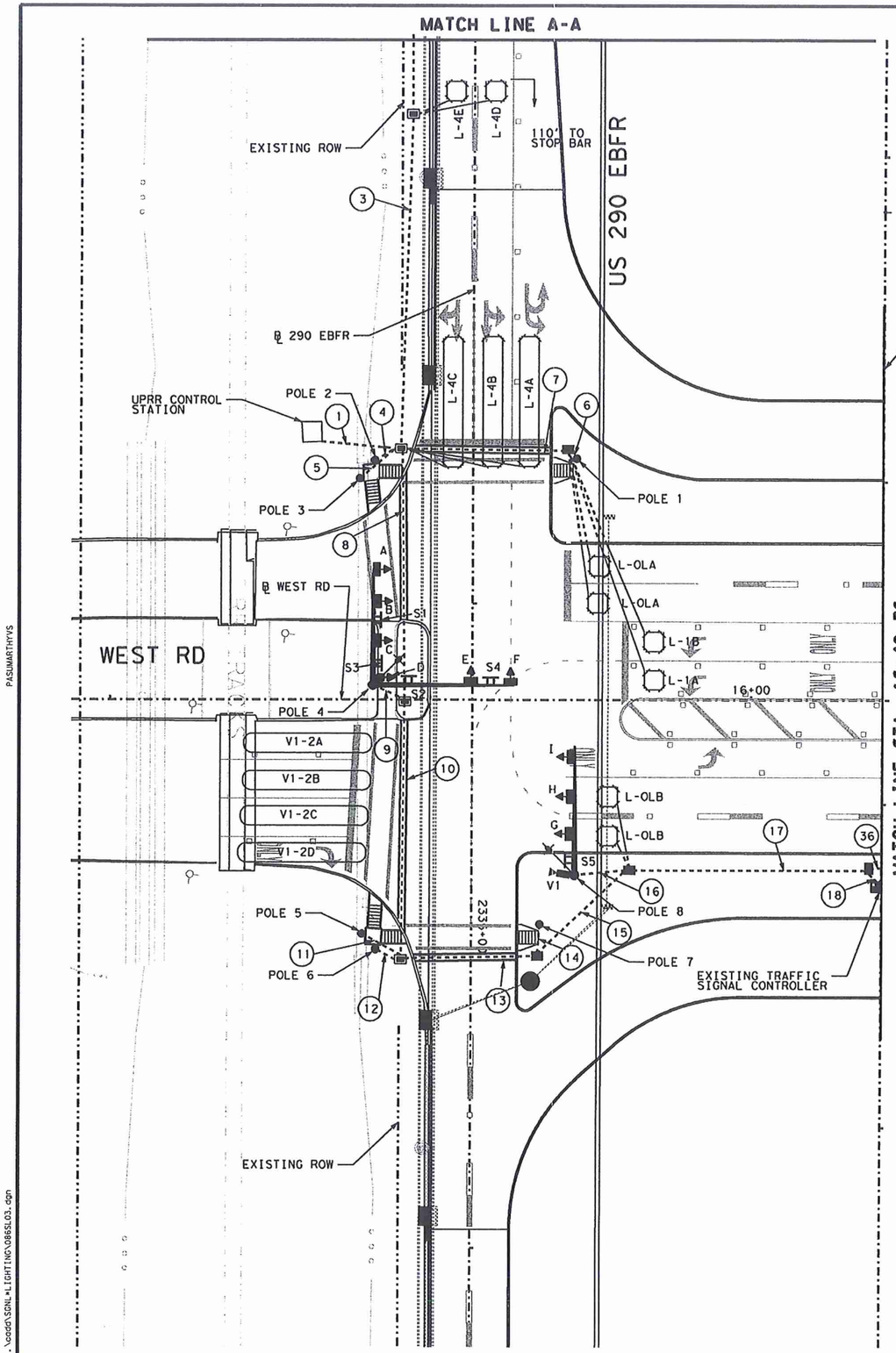
SHEET 2 OF 2

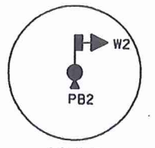
DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1061

0865LE04.dgn

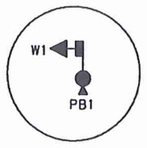
PASUMARTHYVS

11/12/2012 1:01:47 PM ...\Signal+lighting\0865LE04.dgn

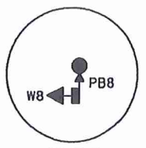




POLE 2



POLE 1



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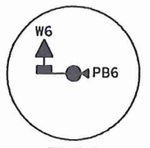

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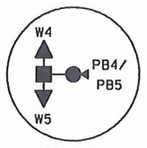

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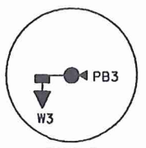

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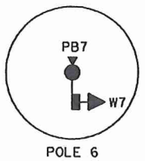
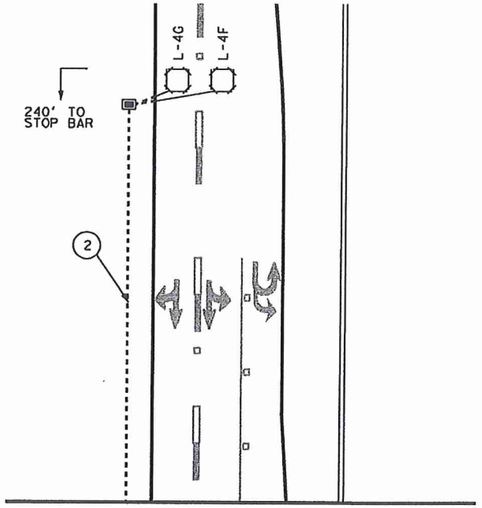
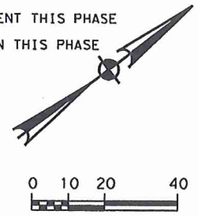


POLE 6

LEGEND:

- CONTROLLER WITH CABINET
- CONDUIT
- BORE CONDUIT
- BRIDGE MOUNTED CONDUIT
- GROUND BOX TYPE D WITH APRON
- GROUND BOX TYPE 2 WITH APRON
- HORIZONTAL TRAFFIC SIGNAL HEAD
- VERTICAL TRAFFIC SIGNAL HEAD
- PEDESTRIAN SIGNAL HEAD
- VIVDS DETECTOR
- MAST ARM AND POLE
- PEDESTAL POLE
- LOOP DETECTOR
- ELECTRICAL SERVICE
- LUMINAIRE WITH 8' ARM
- SMALL SIGN
- PEDESTRIAN PUSH BUTTON
- PROPOSED VIVDS DETECTION ZONE
- (XX) PROPOSED RUN NUMBER
- TEMPORARY WOOD POLE
- CONSTRUCTION ZONE
- TEMPORARY POLE MOUNTED SOLID STATE CONTROLLER
- GROUND BOX TYPE D WITHOUT APRON
- PERMANENT CONSTRUCTION THIS PHASE
- FAST TRACK PAVEMENT THIS PHASE
- TEMP CONSTRUCTION THIS PHASE





NOTES:

1. INSTALL POLES 1, 2, 3, 4, 5, 6, 7 AND 8 AS SHOWN.
2. INSTALL SIGNAL HEADS AT A MINIMUM OF 18 FT-6 IN ABOVE THE ROADWAY.
3. PROVIDE ELECTRICAL SERVICE METER AND DISCONNECT AS SHOWN.
4. PAVEMENT STRIPING IS SHOWN FOR REFERENCE ONLY.
5. FOR SIGN, SIGNAL, CONDUIT AND CABLE SCHEDULE PLEASE REFER TO SHEETS 1064.
6. FOLLOW ADDITIONAL NOTES AS IDENTIFIED ON SHEET 1051.
7. USE EXISTING TRAFFIC SIGNAL CONTROLLER FOR THE PROPOSED SIGNAL.

DESIGN SPEED LIMIT ON US 290 = 40 MPH
DESIGN SPEED LIMIT ON WEST RD = 35 MPH

⚠ Revised 02/19/2013

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on FEB 01, 2013

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

Texas Department of Transportation

US 290
PROPOSED TRAFFIC SIGNAL LAYOUT US 290 AT WEST RD

SHEET 1 OF 2

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1062

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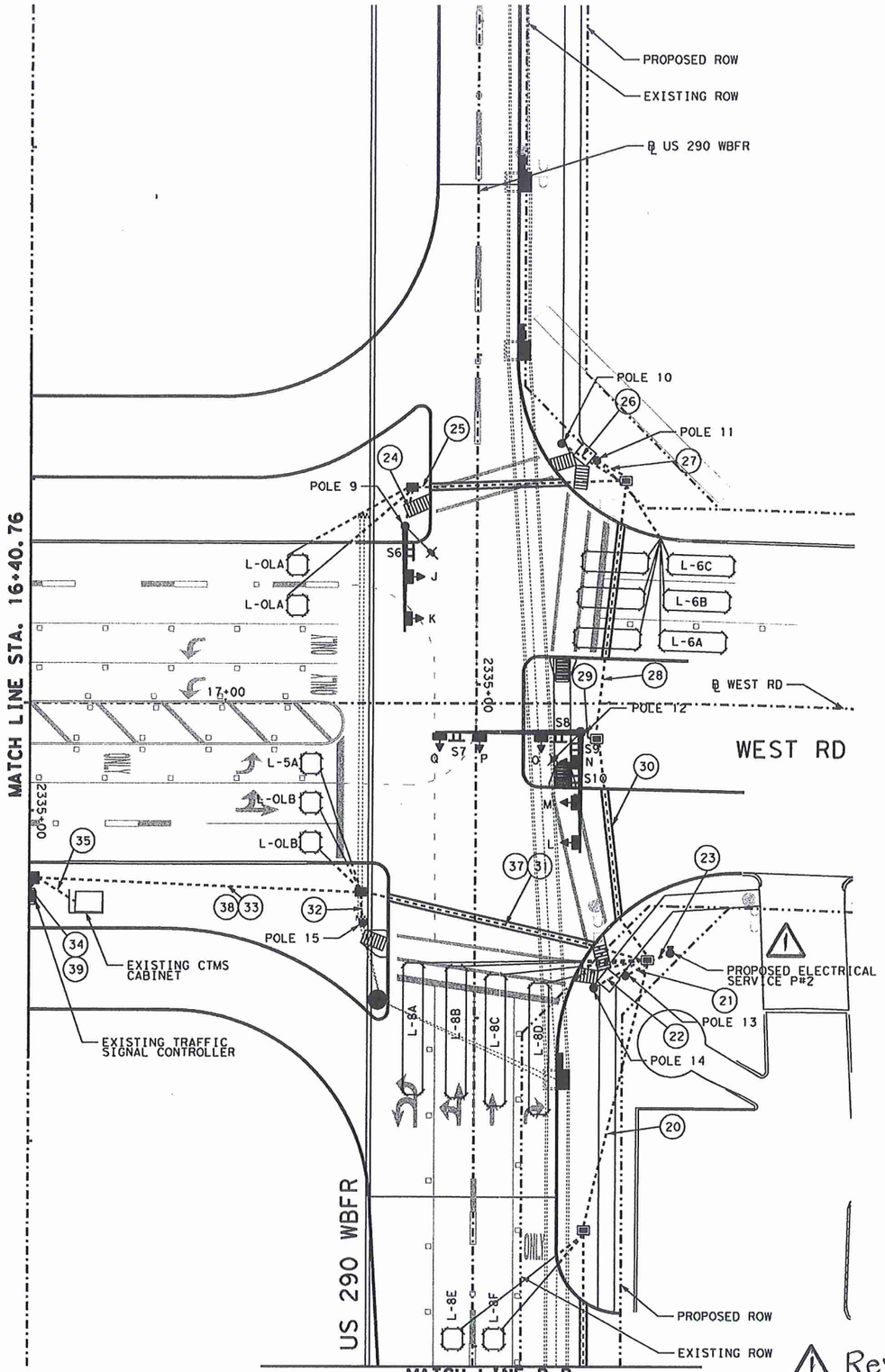
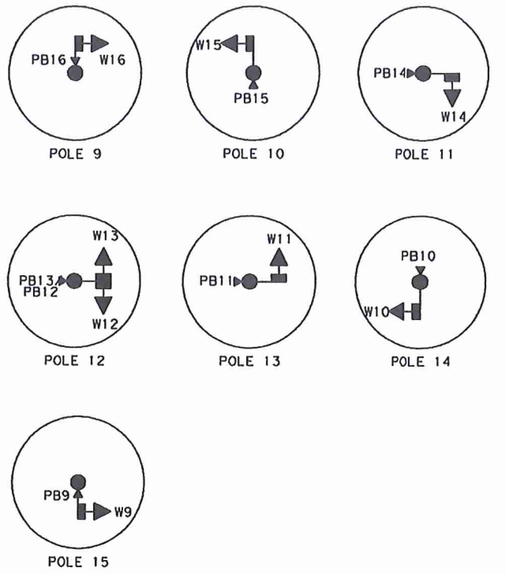
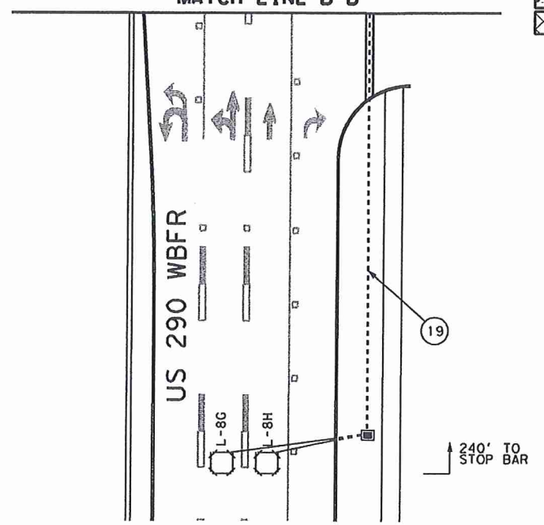
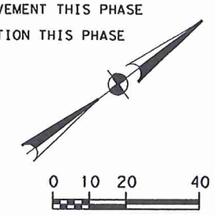




LEGEND:

- CONTROLLER WITH CABINET
- CONDUIT
- BORE CONDUIT
- BRIDGE MOUNTED CONDUIT
- GROUND BOX TYPE D WITH APRON
- GROUND BOX TYPE 2 WITH APRON
- HORIZONTAL TRAFFIC SIGNAL HEAD
- VERTICAL TRAFFIC SIGNAL HEAD
- PEDESTRIAN SIGNAL HEAD
- VIVDS DETECTOR
- MAST ARM AND POLE
- PEDESTAL POLE
- L - LOOP DETECTOR
- ELECTRICAL SERVICE
- LUMINAIRE WITH 8' ARM
- SMALL SIGN
- PEDESTRIAN PUSH BUTTON
- PROPOSED VIVDS DETECTION ZONE
- XX PROPOSED RUN NUMBER
- TEMPORARY WOOD POLE
- CONSTRUCTION ZONE
- TEMPORARY POLE MOUNTED SOLID STATE CONTROLLER
- GROUND BOX TYPE D WITHOUT APRON
- PERMANENT CONSTRUCTION THIS PHASE
- FAST TRACK PAVEMENT THIS PHASE
- TEMP CONSTRUCTION THIS PHASE





NOTES:

1. INSTALL POLES 9, 10, 11, 12, 13, 14, 15 AS SHOWN.
2. INSTALL SIGNAL HEADS AT A MINIMUM OF 18 FT-6 IN ABOVE THE ROADWAY.
3. PROVIDE ELECTRICAL SERVICE METER AND DISCONNECT AS SHOWN.
4. PAVEMENT STRIPING IS SHOWN FOR REFERENCE ONLY.
5. FOR SIGN, SIGNAL, CONDUIT AND CABLE SCHEDULE PLEASE REFER TO SHEET 1064.
6. FOLLOW ADDITIONAL NOTES AS IDENTIFIED ON SHEET 1051.
7. USE EXISTING TRAFFIC SIGNAL CONTROLLER FOR THE PROPOSED SIGNAL.

⚠1 Revised 02/19/2013

DESIGN SPEED LIMIT ON US 290 = 40 MPH
DESIGN SPEED LIMIT ON WEST RD = 35 MPH

STATE OF TEXAS
PRAVEEN PASUMARTHY
100502
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on FEB 01, 2013

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

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US 290
PROPOSED TRAFFIC SIGNAL LAYOUT US 290 AT WEST RD

SHEET 2 OF 2

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1063

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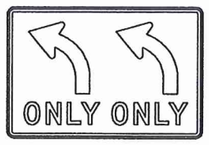
PROPOSED SIGNAL HEAD SCHEDULE

SIGNAL HEAD	DESIGNATION
12" LED HORIZONTAL (R Y G)	B, E, F, H, I, J, M, P, Q
12" LED HORIZONTAL (R Y G) ONE WAY	A, L
12" LED HORIZONTAL (R Y G) ONE WAY	G, K
12" LED HORIZONTAL (R Y G) LEFT TURN SIGNAL	C
12" LED HORIZONTAL (R R Y G) LEFT TURN SIGNAL	N
12" LED VERTICAL (R Y G) LEFT TURN SIGNAL	D
12" LED HORIZONTAL (R Y G Y G)	O

PEDESTRIAN SIGNAL/SIGN SCHEDULE

PROPOSED SIGNAL/SIGN	DESIGNATION
 COUNTDOWN TYPE	W1-16
 R10-3e (R)	PB2, PB6, PB9, PB10, PB14
 R10-3e (L)	PB1, PB3, PB7, PB8, PB11, PB15, PB 16
 R10-3e	PB4/PB5, PB12/PB13

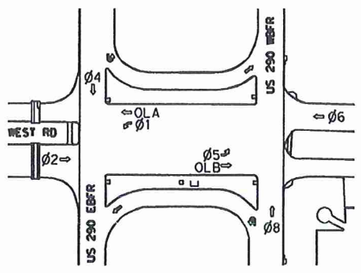
PROPOSED STANDARD SIGNS



S1

S4, S7, S10
30" X 30"
R3-8L

PHASING ASSIGNMENTS



ELECTRICAL SCHEDULE

ITEM	RUN NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
POWER	1/C # 4 XHHW																							2														2	2	2
GROUND	1/C # 4 BARE COPPER																							1														1	1	1
	1/C # 6 BARE COPPER	1			1	1	1	1	1	1	1	1	1	1	1	1	1	2	2			1	1		1	1	1	1	1	1	2	1	2	2		1			
LUMINAIRE	4/C # 12 TRAY CABLE									1	1			1		1	1	2					4	1	1			1	1	2	2		2			2			
SIGNAL CABLE	2/C # 12 TY A (PED. PUSH BUTTON)				1	1	1	1	3	1	4	1	1	6	1	7		7	7			1	1		1	1	1	1	3	1	4	6	1	7	7				
	4/C # 12 TY A (PED. SIGNAL HEAD)				1	1	1	1	3	2	5	1	1	7	1	8		8	8			1	1		1	1	1	1	3	2	5	7	1	8	8				
	7/C # 12 TY A (TRF. SIGNAL HEAD)								4	4				4		4	1	5	5						1	1			1	4	5	5		5	5					
VIVDS	COAXIAL CABLE (RG -59)																1	1	1																				
	3/C # 16 POWER																1	1	1																				
LOOP DETECTOR	2/C # 14 TY C		2	4			4	11		11			11		11			13	13	2	4					2			5		5	13		13	13				
RAIL ROAD	2/C # 12 TY A (PREEMPTION CABLE)	1						1		1			1		1			1	1																				
CONDUIT	2" RMC				1	1	1					1	1		1							1	1	1	1		1	1					1			1	1		
	3" RMC								1								1			1										1										
	4" RMC																																							
	2" PVC SCH 80	1	1	1																	1																	1	1
	3" PVC SCH 80																	1	1														1	1					
	4" PVC SCH 80															1		1	1														1	1					
	2" PVC SCH 80 (BORE)																																							
	3" PVC SCH 80 (BORE)							1	1																	1		1			1							1		
	4" PVC SCH 80 (BORE)									1				1																		1	1							

ELECTRICAL SERVICE DATA

SERVICE ID	ELECTRICAL SERVICE DESCRIPTION	SERVICE CONDUIT SIZE (RMC)	SERVICE CONDUCTOR NO./SIZE	SAFETY SWITCH (AMPS)	MAIN DISCONNECT (POLE/AMP)	TWO POLE CONTACTOR (AMPS)	LOADCENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH (POLE/AMPS)	KVA LOAD
P#2	TY D (120/240) 070 (NS) SS (E) SP (O)	1 1/4	2/#4	N/A	2P/70	30	100	T.S.	1P/50	<7.1
								Lighting	2 - 2P/15	

PROPOSED STREET NAME SIGN SCHEDULE

S3, S5, S6, S9

US 290 ℄42"E;
1.5" Radius, 0.5" Border, White on Green;
℄US 290E ClearviewHwy-2-W;

S2, S8

West Rd ℄54"E;
1.5" Radius, 0.5" Border, White on Green;
℄West RdE ClearviewHwy-2-W;

VEHICLE DETECTION CHART

TYPE	DESIGNATION	PHASE	SIZE	DIRECTION
LOOP	L-1A,L-1B	1	6'X6'	SBL
VIDEO	V-2A,V-2B,V-2C,V-2D	2	6'X40'	NBT
LOOP	L-4A,L-4B,L-4C	4	6'X40'	EBT
LOOP	L-4D,L-4E,L-4F,L-4G	4	6'X6'	EBT
LOOP	L-5A	5	6'X6'	NBL
LOOP	L-6A,L-6B,L-6C	6	6'X20'	SBT
LOOP	L-8A,L-8B,L-8C,L-8D	8	6'X40'	WBT
LOOP	L-8E,L-8F,L-8G,L-8H	8	6'X6'	WBT
LOOP	L-OLA	OLA	6'X6'	SBT
LOOP	L-OLB	OLB	6'X6'	NBT

POLE SCHEDULE

POLE NUMBER	POLE LENGTH	MAST ARM LENGTH	LOCATION	FOUNDATION DETAILS
1	10'		STA. 15+45.6, 74.87 LT	
2	10'		STA. 14+82.6', 74.35 LT	
3	10'		STA. 14+77.9', 68.72 LT	
4	30'	44' AND 36'	STA. 14+82.1', 4.51 LT	TYPE 42-A; 17'
5	10'		STA. 14+78.9', 72.46 RT	
6	10'		STA. 14+83.2', 77.20 RT	
7	10'		STA. 15+34.3', 69.50 RT	
8	30'	40'	STA. 15+45.2', 54.50 RT	TYPE 36-B; 15'
9	30'	32'	STA. 17+54.5', 53.55 LT	TYPE 36-A; 15'
10	10'		STA. 18+2.0', 78.72 LT	
11	10'		STA. 18+12.7', 73.58 LT	
12	30'	44' AND 36'	STA. 18+8.0', 8.73 RT	TYPE 42-A; 17'
13	10'		STA. 18+22.1', 81.58 RT	
14	10'		STA. 18+12.4', 85.26 RT	
15	10'		STA. 17+42.1', 65.83 RT	
PROPOSED ELECTRICAL SERVICE			STA. 18+35.6', 74.78 RT	

Revised 02/19/2013

PRAVEEN PASUMARTHY 100502 LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on FEB 01, 2013

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

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US 290
LEGEND FOR
PROPOSED TRAFFIC SIGNAL
LAYOUT US 290 AT WEST RD

SHEET 1 OF 1

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1064

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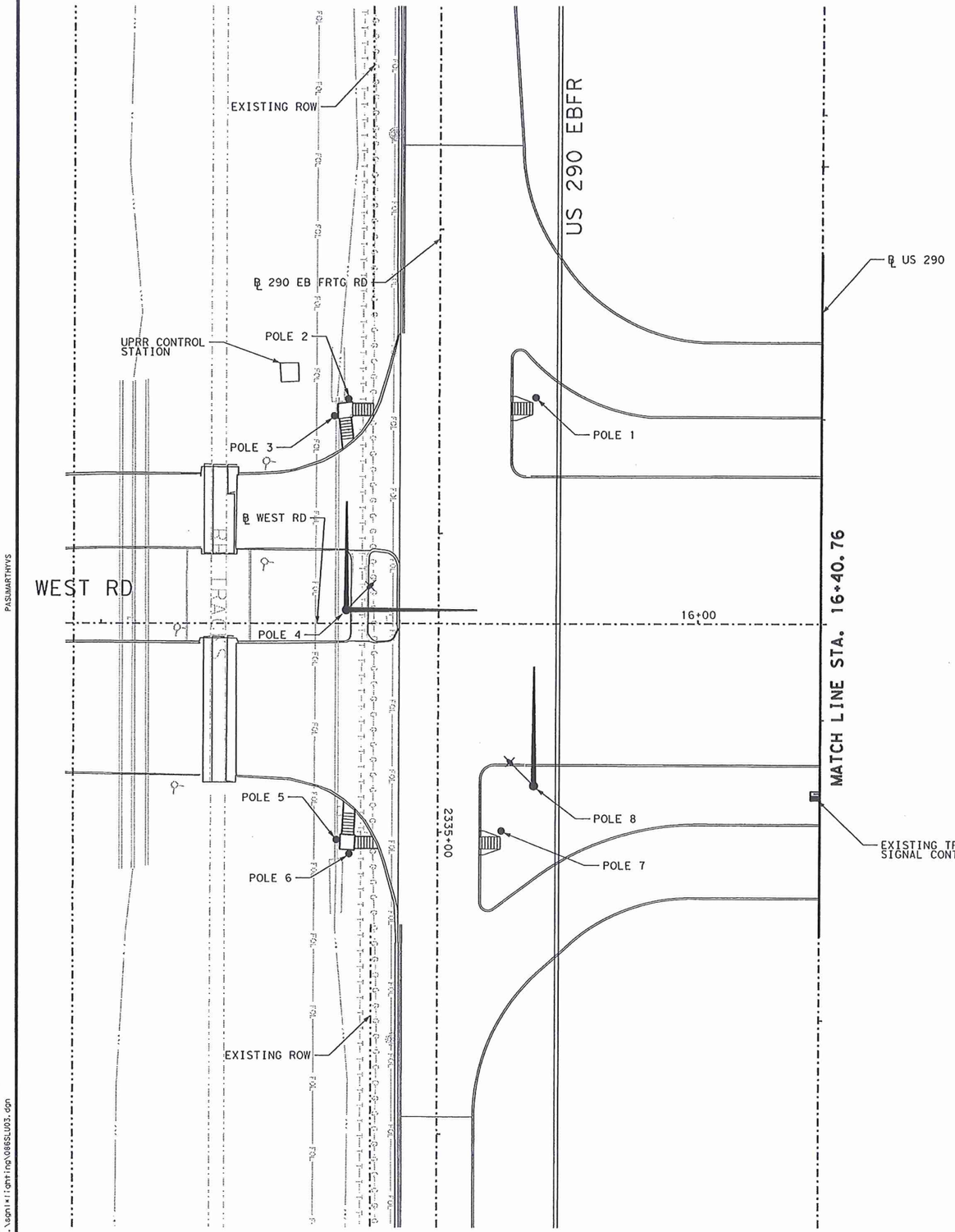

LEGEND:

- CONTROLLER WITH CABINET
- CONDUIT
- BORE CONDUIT
- BRIDGE MOUNTED CONDUIT
- GROUND BOX TYPE D WITH APRON
- GROUND BOX TYPE 2 WITH APRON
- HORIZONTAL TRAFFIC SIGNAL HEAD
- VERTICAL TRAFFIC SIGNAL HEAD
- PEDESTRIAN SIGNAL HEAD
- VIVDS DETECTOR
- MAST ARM AND POLE
- PEDESTAL POLE
- LOOP DETECTOR (L -)
- ELECTRICAL SERVICE
- LUMINAIRE WITH 8' ARM
- SMALL SIGN
- PEDESTRIAN PUSH BUTTON
- PROPOSED VIVDS DETECTION ZONE
- PROPOSED RUN NUMBER (XX)
- TEMPORARY WOOD POLE
- CONSTRUCTION ZONE
- TEMPORARY POLE MOUNTED SOLID STATE CONTROLLER
- GROUND BOX TYPE D WITHOUT APRON
- PERMANENT CONSTRUCTION THIS PHASE
- FAST TRACK PAVEMENT THIS PHASE
- TEMP CONSTRUCTION THIS PHASE

0 10 20 40

STATE OF TEXAS
PRAVEEN PASUMARTHY
100502
LICENSED PROFESSIONAL ENGINEER

The seal appearing on this document was authorized by PRAVEEN PASUMARTHY, P.E. 100502 on NOV. 15, 2012

CDM SMITH
Firm Registration # F-3043

REV. NO.	DATE	DESCRIPTION	BY

CDM Smith
FIRM REGISTRATION NO: F-3043

Texas Department of Transportation
© 2012

US 290
TRAFFIC SIGNAL UTILITY LAYOUT US 290 AT WEST RD

SHEET 1 OF 2

DSN:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1065

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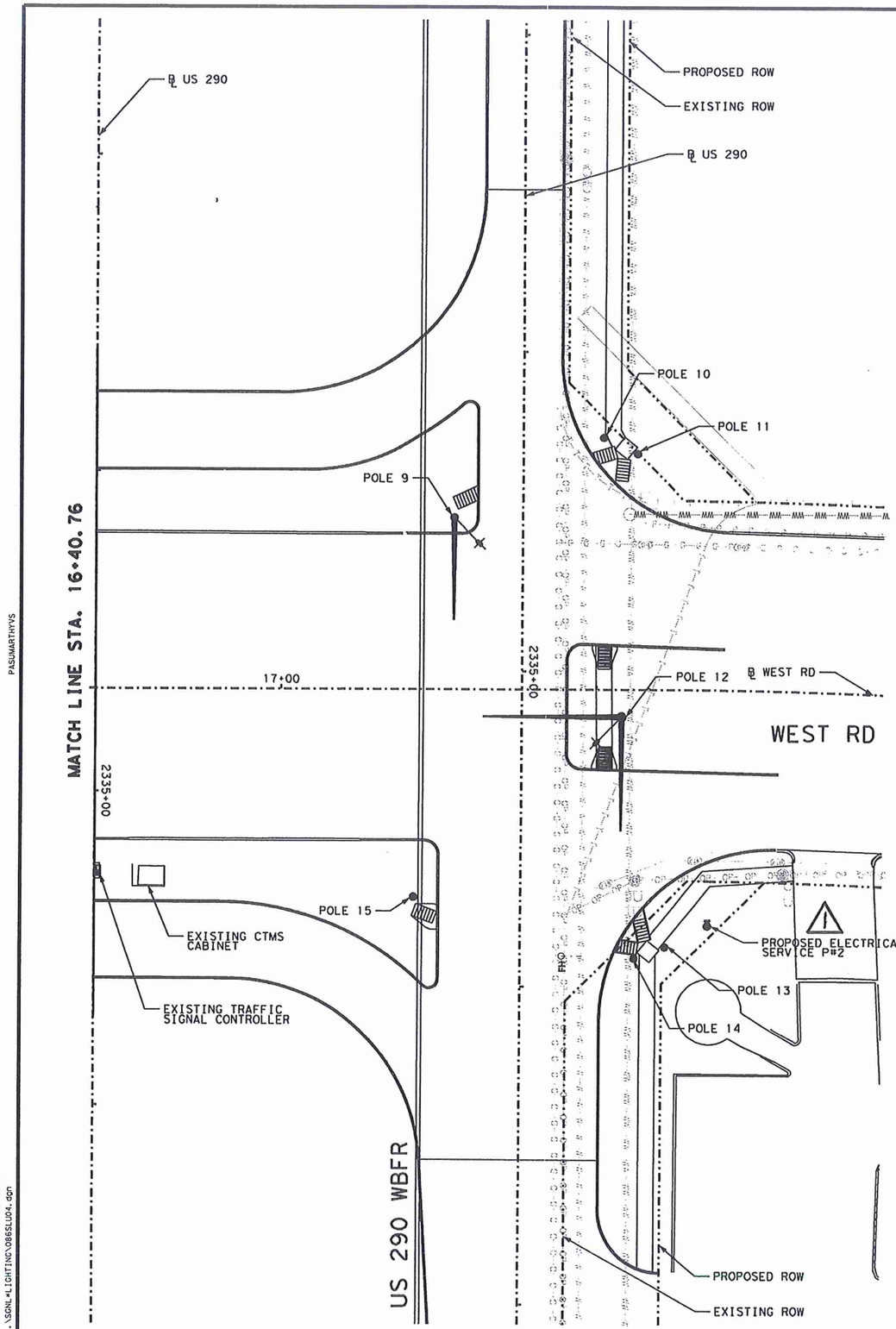

LEGEND:

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- GROUND BOX TYPE D WITH APRON
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- L - LOOP DETECTOR
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- LUMINAIRE WITH 8' ARM
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- PROPOSED VIVDS DETECTION ZONE
- XX PROPOSED RUN NUMBER
- TEMPORARY WOOD POLE
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- GROUND BOX TYPE D WITHOUT APRON
- PERMANENT CONSTRUCTION THIS PHASE
- FAST TRACK PAVEMENT THIS PHASE
- TEMP CONSTRUCTION THIS PHASE

0 10 20 40

STATE OF TEXAS
PRAVEEN PASUMARTHY
100502
LICENSED PROFESSIONAL ENGINEER

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Texas Department of Transportation

US 290
TRAFFIC SIGNAL UTILITY LAYOUT US 290 AT WEST RD

SHEET 2 OF 2

DSN:	FED.RD. DIV.NO.	STATE	PROJECT NO.			HIGHWAY NO.
CK:	6	TEXAS				US 290
DRN:	STATE DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CK:	HOU	HARRIS	0050	08	086	1066

⚠ Revised 02/19/2013

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