



REDFLEX TRAFFIC SYSTEMS

OVERVIEW OF
PROCEDURES

21453(a) CVC

CALIFORNIA VEHICLE CODE SECTION

21453(a):

A driver facing a steady circular red signal alone shall stop at a marked limit line, but if none, before entering the crosswalk on the near side of the intersection or, if none, then before entering the intersection, and shall remain stopped until an indication to proceed is shown, except as provided in subdivision (b).

(sub-b prohibits turn when sign restricts)



REDFLEX
SmartScene™
Combined Video
and Still Camera
System

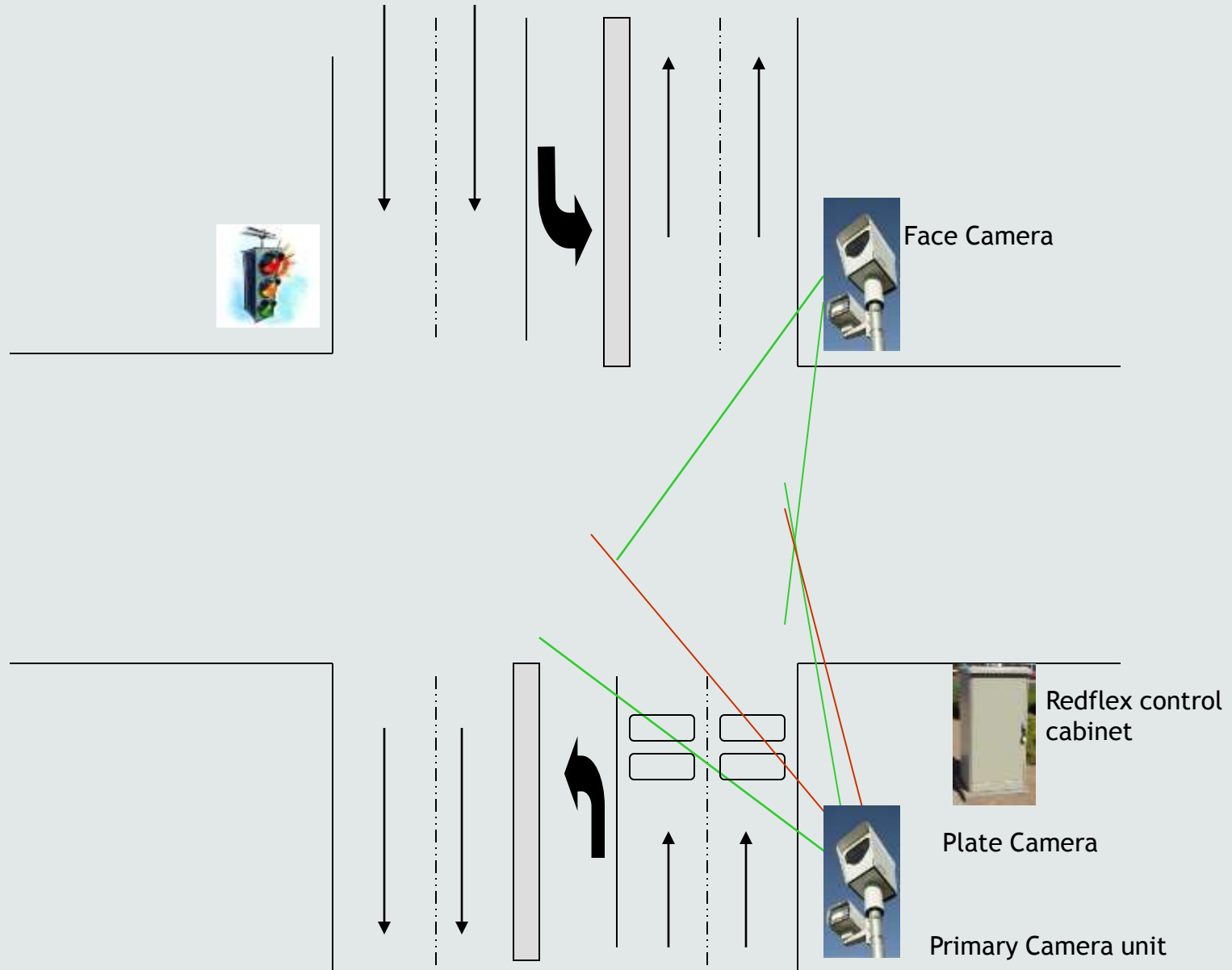


- Typical intersection configuration has three digital still cameras (Scene, Face, Plate).
- Two Flash units (Scene, Face)
- One Wide Angle Scene Full Motion Video Camera provides approx. 12 seconds of video.
- Main Computer
- Router

RedFlex Intersections in San Leandro

- Northbound Davis Street at Callan Avenue (Mapping Radar System instead of ground based loop system)
- Eastbound and Westbound Halcyon Avenue at Washington Avenue
 - Eastbound Marina Blvd., at Teagarden Avenue
 - Eastbound Fairmont Avenue at E.14th Street.

Typical Intersection Setup



INDUCTIVE LOOP

Each monitored lane contains its own set of inductive loop vehicle detectors, embedded in roadway, covered with epoxy.

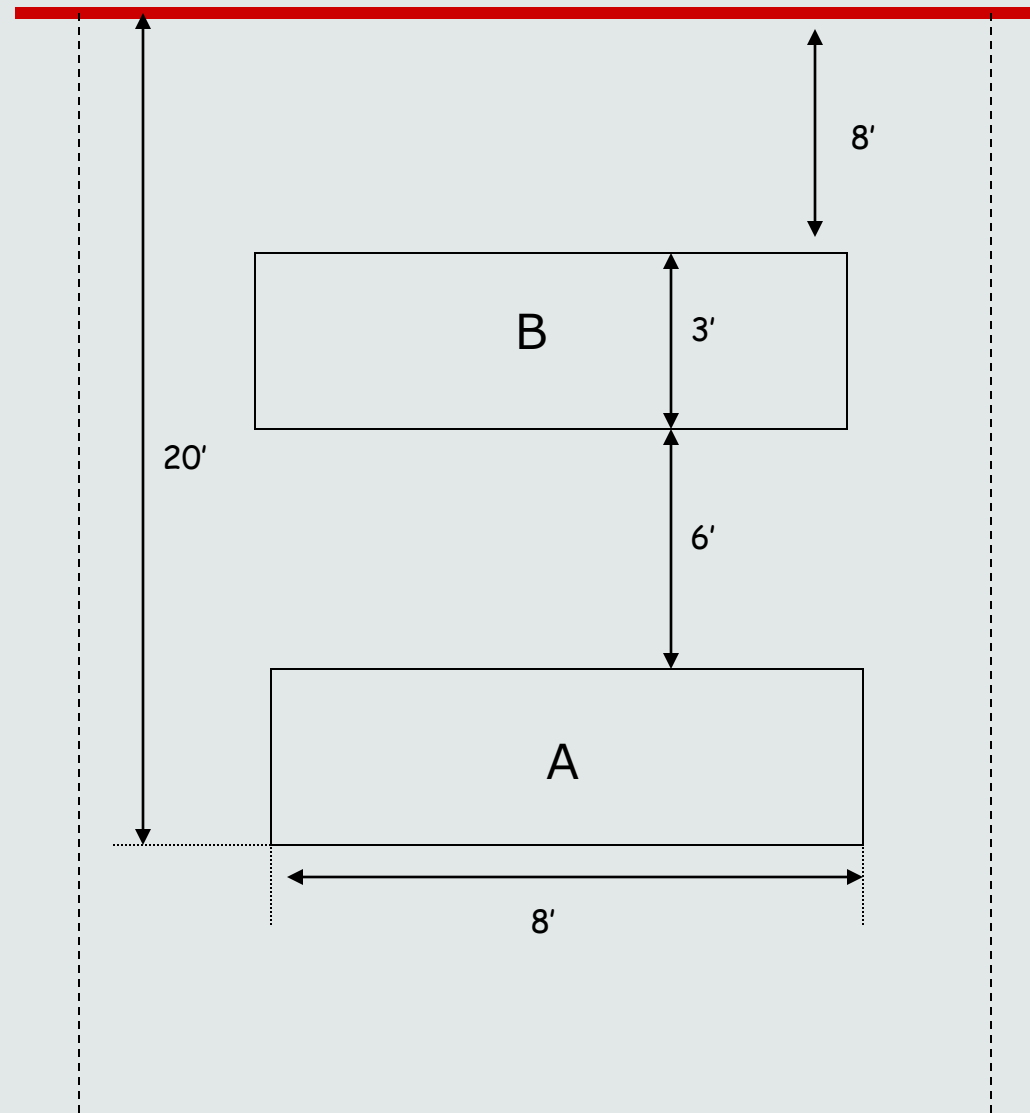
The primary function of the detector is to detect vehicle **presence** The detectors also assist in determining vehicle speed

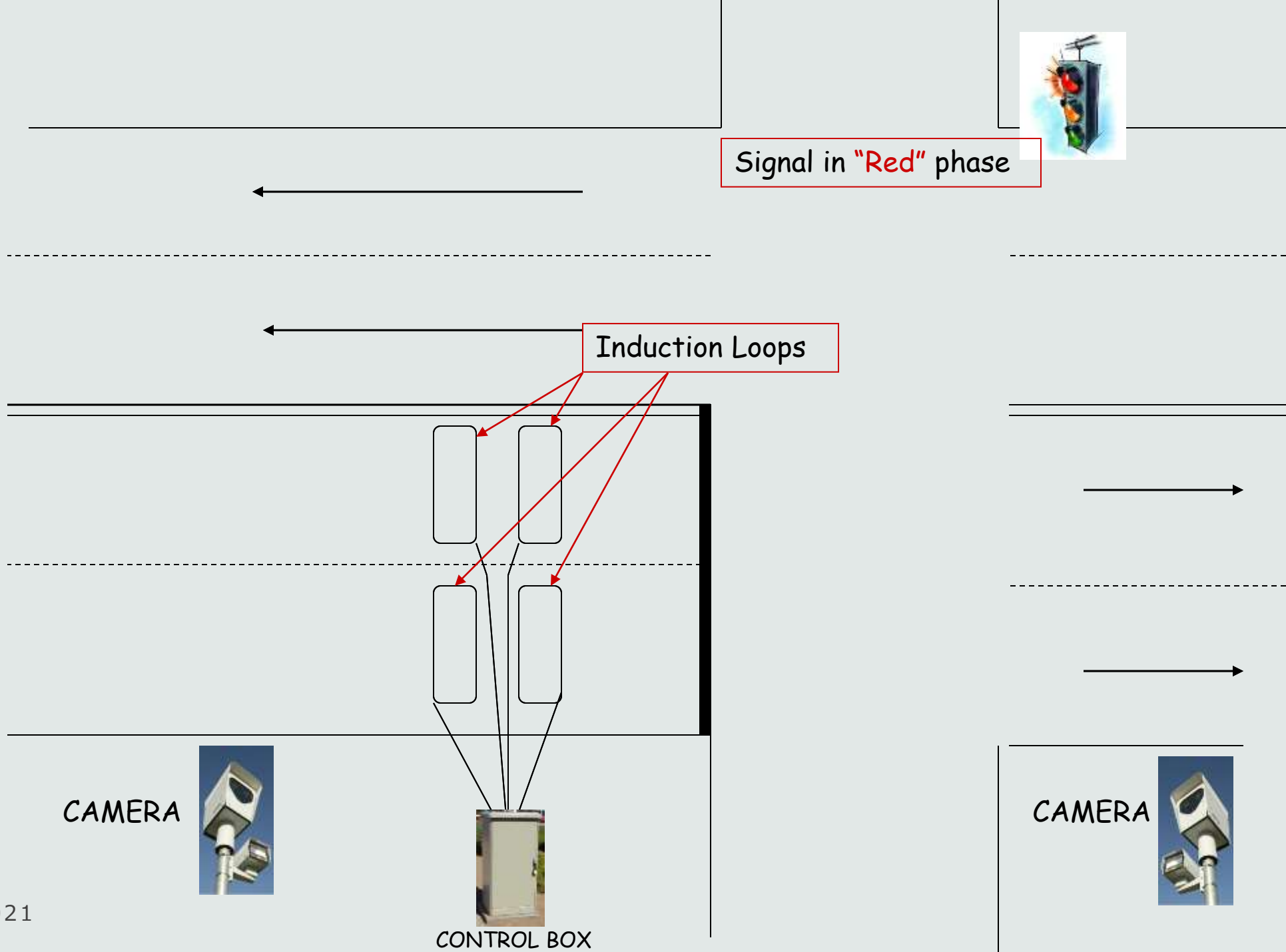
Speed (Distance/Time) calculated using the time it takes a vehicle to trigger the leading edge of A Sensor, to the time it takes the vehicle to trigger leading edge of B Sensor.

– this is called the “A Signal. We use this “A Signal” because the vehicle may slow as it progresses toward limit line and still run the red light.

Average lifetime of loops is 10 years.

LIMIT LINE





Mapping RADAR

- San Leandro (SLE-14DA-01; Northbound Davis St., at Callan Ave.)
- Unique to RTS: built and designed specifically for Redflex.
- Uses phase mono-pulse technology (similar to weather doppler); attached to pole near camera.
- System continually tracks the vehicle to verify that it fails to stop prior to the established violation line.
 - *Tracks speed and direction of each detected object 20x per second with an accuracy of 1 centimeter; MORE accurate than other technologies because tracks vehicle speed constantly.*
 - *If vehicle stops within the preset stop zone no violation will be captured.*
 - *Can cover up to 4-6 lanes, depending on length of intersection*

Threshold Speed

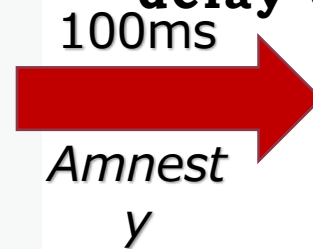
Threshold Speed: *Predicts vehicle will be unlikely to stop before crossing the limit line.*

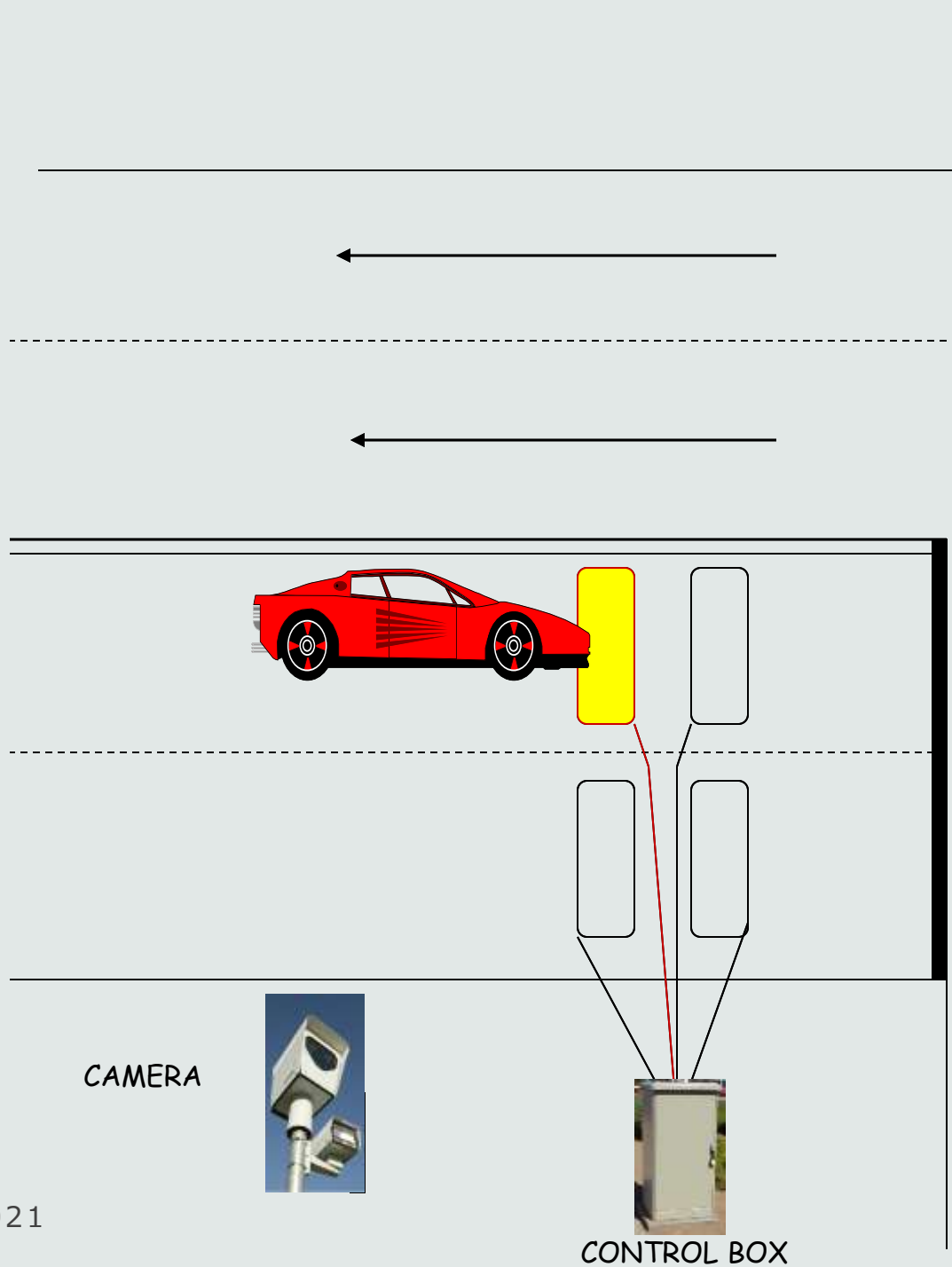
-The City of San Leandro has set their Threshold for each monitored lane to 13 MPH.

Red Amnesty Period

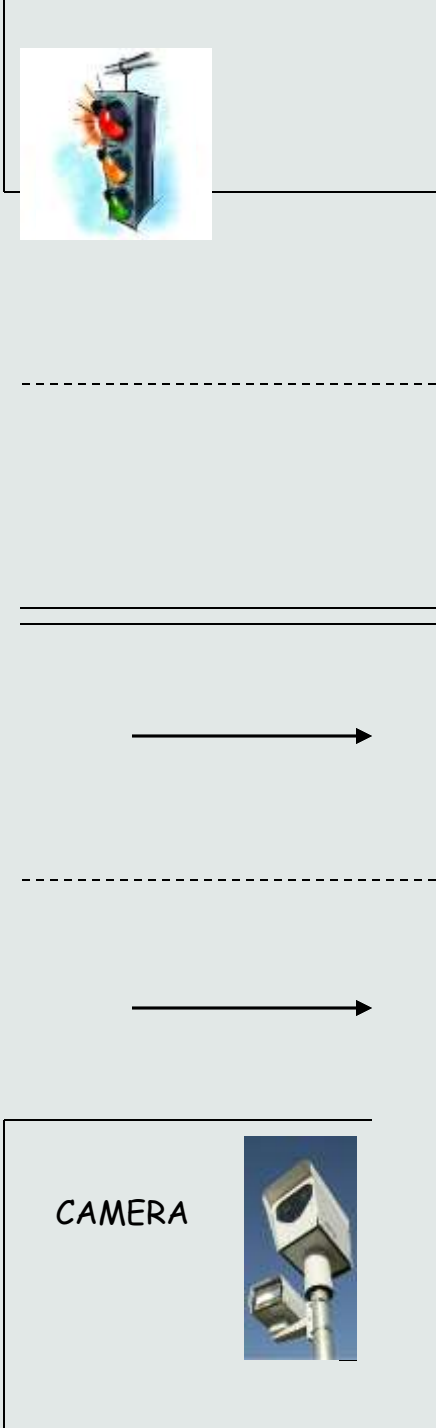


When voltage is applied to the red signal lamp (typically 120v) that same voltage is sent to our system through means of a relay switch and sometimes an optical coupler. The nature of this connection is that by default a 100ms or 1/10th of a second delay is added to the activation time. This has the effect of providing an “amnesty” period to the capture. This delay equates to 5 feet @ 45 miles per hour.

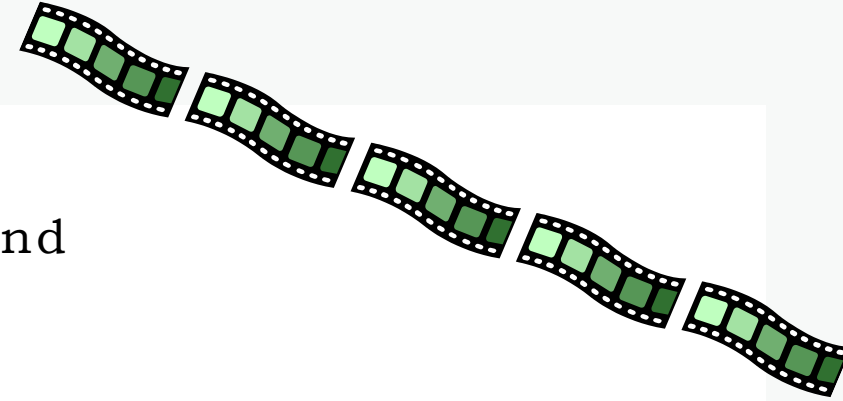




3/30/2021



Video Capture Sequence



Captures 29.97 frames per second

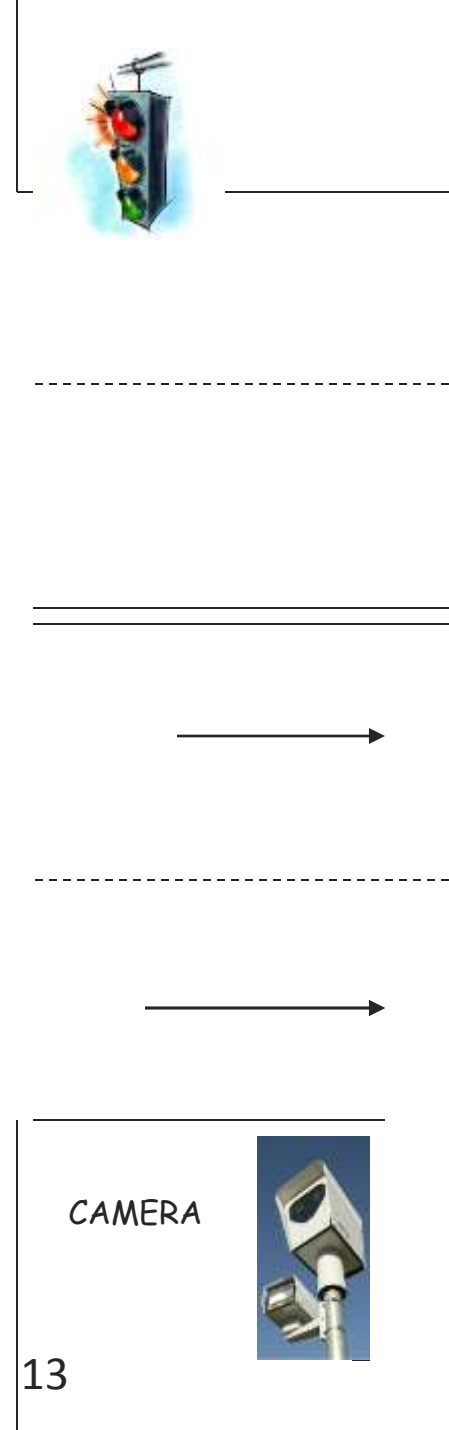
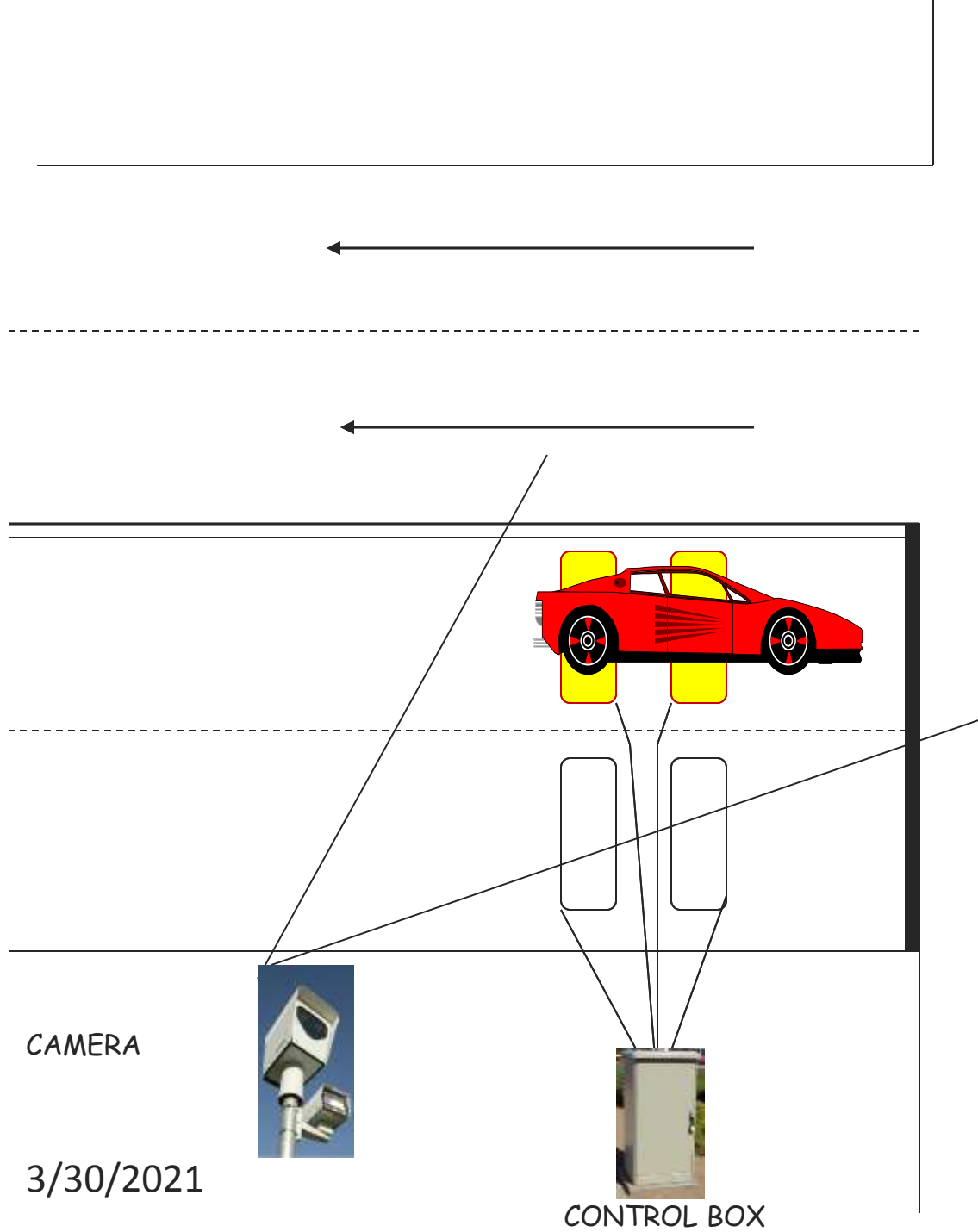
Constantly running

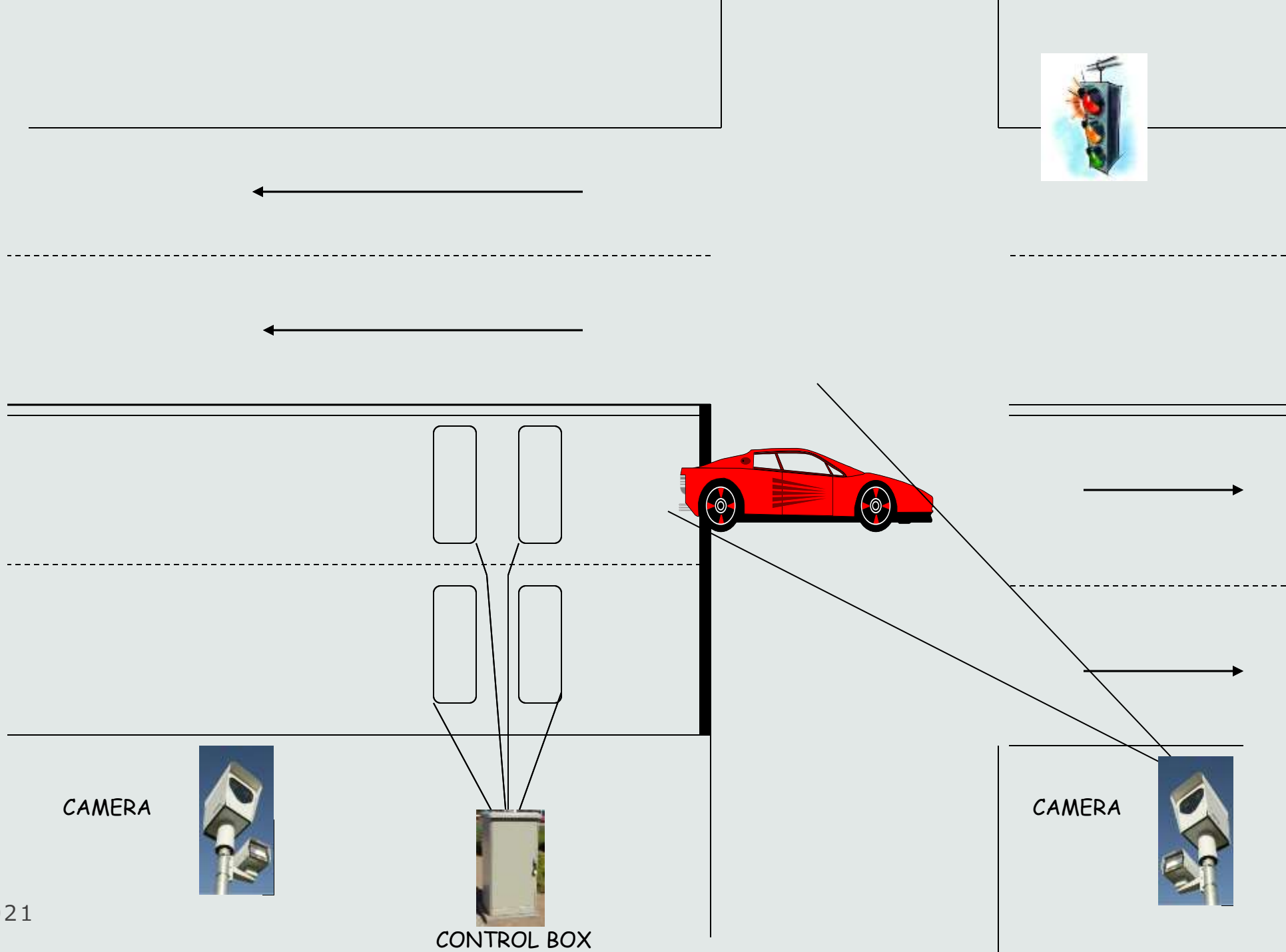
Buffered memory

When system indicates a violation has occurred RTS
proprietary software isolates and captures approx. 6
seconds of (pre-violation) buffered memory and approx.
6 seconds of post violation to make an approx. 12
second video.

Secondary evidence: It corroborates the primary evidence
(digital photos).

Captured and stored on hard drive as part of the incident
file





Recap

Four elements must be present for the system to commence capture of the 4 digital images and the approx. 12 second video:

1. Signal must be in the **RED PHASE**.
2. The **RED PHASE** must be red for at least 1/10th of a second or greater (Amnesty Period).
3. Sensors must detect a vehicle.
4. Vehicle must be traveling at a speed equal to or greater than the preset “threshold speed” determined by the Police Department.

Change Offense Type**Incident Details**

Date:	10/20/2020 2:09:07 PM
Type:	R
Offnc Code:	CVC 21453(a)
Offnc Desc:	Failure to Stop at Red Light
SA Tm in Red:	1.05
SB Tm in Red:	2.70
Location:	E. 14th & Fairmont
Speed Zone:	35
Veh Speed:	14

Vehicle Details

Veh License:	CA
Veh Year:	2018
Veh Make:	MERCEDES BENZ
Veh Model:	
Veh Body:	4 door Automobile
VIN:	
Comm Veh:	NO

Owner Details

Name:	
Address:	HAYWARD CA 94544
Hair Color:	BLK
Eye Color:	BLK
Height:	5'06"
Weight:	150
Gender:	M
DOB:	
DL Num:	
Comm Lic:	NO

Responsible Party

Name:	
Address:	HAYWARD CA 94544
Hair Color:	BLK
Eye Color:	BLK
Height:	5'06"
Weight:	150
Gender:	M
DOB:	
DL Num:	
Comm Lic:	NO

FACE**PLATE****SCENE A - TIME IN RED 1.05**

Location: SLE-14FA-01 Fairmont Dr. and East 14th St. , San Leandro, CA [4.12.98.0]
Date: Tuesday 20 October 2020 Time: 14:09:07 Frame: 11 Speed Limit: 35 MPH
Lane: 3 RED : 1.05 Elapsed Time: 0.00

**SCENE B - TIME IN RED 2.70**

Location: SLE-14FA-01 Fairmont Dr. and East 14th St. , San Leandro, CA [4.12.98.0]
Date: Tuesday 20 October 2020 Time: 14:09:08 Frame: 11 Speed Limit: 35 MPH
Lane: 3 RED : 2.70 Elapsed Time: 1.65











**Information
Transmitted to
SLPD and are
reviewed**

**Retired Lt. Christopher Tankson
Retired Sgt. Kirby Wong**

Reviewing / Considerations: (The human factor)

- 1. Are all 4 photographs present?**
- 2. Are signals in Pre/Post photos in red phase?**
- 3. Does Pre-violation photo show vehicle behind limit line or crosswalk?**
- 4. Does Post-violation photo show vehicle entered the intersection?**
- 5. Can the driver be identified?**
- 6. Is the license plate clear and legible?**
- 7. Is the information provided complete?**
- 8. Does the video corroborate the photos?**
- 9. Is the Reg Owner information complete? If not, complete info by conducting DMV search.**

Authorizing the Citation:

- 1. SLPD Staff approves or denies the violation, and transmits their opinion to Redflex.**
- 2. Redflex completes the citation and sends copy to the violator as well as to Alameda County Courts.**
- 3. SLPD Staff are provided subpoena to Alameda County Courts if violation is contested.**

Total Citations Issued:

YEAR_DETECTED	STRAIGHT	LEFT_TURN	RIGHT_TURN
2017	842	311	9010
2018	862	306	8628
2019	901	179	8134
2020	785	120	8102