

A. SANTA CLARA POLICE DEPARTMENT UPDATE

The attached **CROSSWALK ILLUMINATION REPORT - June 15,2020** outlines a safety enhancement for Lafayette Avenue and Agnew Road signalized intersection.

A study on the Cabrillio Avenue and Calabazas Boulevard intersection where a fatality occurred is being assembled.

C. EL CAMINO REAL SPECIFIC PLAN UPDATE

Please provide an update on the illumination and glare standards for street and sidewalk. Currently there are a number of buildings that provide intense sidewalk illumination and glare to the roadway, while other buildings have no sidewalk illumination. The City decorative street lights have a second fixture for sidewalk illumination at random locations leaving portions of sidewalks without illumination. The crosswalks across and along the Real are minimally and poorly illuminated. Specifics and details of the Illuminations Standards were not apparent in the referenced documents.

The location of tree wells, spacings and the type of trees was not referenced. Underground utility conflicts for tree locations were not generally or specifically outlined.

D. CREEK TRAIL NETWORK EXPANSION MASTER PLAN

A. SARATOGA CREEK

1. The Land Availability Map should show the limit of the preliminary trail alignment plan at Forbes Avenue(Project Limit). The impossibility of extending the trail to Stevens Creek Blvd. should be clearly stated.

The Right of Way acquisition and the impossibility of constructiNG segments of the various trails appear to eliminate the need for a Master Plan. Please explain the justification for the continuation of the Report. Are there any preliminary cost estimates for each of the trails?

E. VTA BPAC UPDATE

Please clarify the differences between the ***button add-on*** and the ***times*** for the big streets. Do each of these have voice count down equipment?

F. GRANT ACTIVITY

Please describe the projects that are planned for the TDA banked funds.

G. BIKE TRAIL SIGNAGE

The suggested sign locations should be shown on the exhibits. Additionally, limited green pavement markings and additional pavement markings should be recommended for both streets.

ITEM 1.: STANDARDS –

1. Compliance with the Handi-Cap Standards should be included.
2. All signalized and improved crosswalks should comply with the new **IES RP-8-18** standard. The standard needs to be adopted per the recommendation of the Master Plan. Luminaire arm lengths, LED fixture light distribution patterns and photo control turn on light density threshold should be adopted at all signalized and improved crosswalks.
3. A general pavement smoothness Standard should be adopted. Trench paving, street patching and grinding to be specifically included.
4. A friction Standard or material Standard with grit density specifications. The application of Thermoplastic and paint striping, green bike lane markings, pre-made and painted legends to be specifically included. Additionally, utility box covers and valve covers to be included whether in the streets or sidewalks.
5. Steel plate trench covers need to have a friction Standard and friction coating replacement Standard.
6. –
7. Water meter boxes and utility boxes should also be included
8. Also include any Bike Lane obstruction
9. –
10. NEW – There is limited consistency in pavement striping and legends throughout the City. A Standard would lead to safer, uniform street conditions. This could be accomplished by a detailed listing of standardized applications selected from related publications.

CROSSWALK ILLUMINATION

CITY OF SANTA CLARA

Mr. Bruce Donoghue

BPAC MEMBER

June 15, 2020

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INTRODUCTION

CROSSWALK ILLUMINATION

The recent fatal accident of a 15 yr. old pedestrian at the intersection of Agnew Road and Lafayette Avenue is reviewed. The accident reporting indicates the pedestrian was struck while crossing Lafayette Avenue against a *Do Not Walk* pedestrian signal. The vehicle had a green signal.

The illumination of the intersection's crosswalks is reviewed, as the lack of adequate or City code illumination appears to be a contributing factor to the accident. The illumination of crosswalks at wide streets is typically non-uniform and dim. The timing of the pedestrian signal also is a part of the background conditions which could have an impact on the reasons for the tragedy.

The exhibits depict the existing conditions including an illumination study that upgrades the various poles, luminaire arm lengths, and the type and light distributions of the LED light fixtures. There are two sets of illumination upgrade reviews

. The first review replaces the intersection equipment at the current intersection using design Standards outlined in the adopted Pedestrian Master Plan. The second review employs the new IES RP-8-18 Standard that includes a *Vertical Illumination Standard* as well as the typical *Horizontal Illumination Standard*. The new IES Standard is recommended for adoption in the Pedestrian Master Plan.

The City's Public Works Department and the Silicon Valley Power Department have design responsibility for roadways and signalized intersections. No responsible City Department could be identified for the illumination of striped crosswalks that typically have very poor illumination.

2. SUMMARY OF EXHIBITS – EXISTING CAPACITY

PEDESTRIAN MASTER PLAN

Lighting

Recommendations:

1. Develop street light guidelines and light level goals that meet or exceed American National Standard Institute (ANSI)/Illuminating Engineering Society (IES) recommended best practices for roadway lighting.
2. Work with Silicon Valley Power to expand LED Streetlight Retrofit Program to priority pedestrian zones and other areas outside of these zones, as opportunity arises.

Silicon Valley Power (SVP) is the City agency responsible for the installation and maintenance of Santa Clara's streetlights. In 2015, Silicon Valley Power completed the retrofit of existing high pressure sodium and mercury vapor streetlights in the southern part of the City with more efficient LED streetlights. In December 2017, SVP began the retrofit of the traffic safety lights at major intersections in this same area with more efficient LED lights. This area is covered under Section 1 in Map 12. Following this, SVP retrofitted both the streetlights and traffic safety lights in Section 2 and Section 3 with more efficient LED streetlights. The work was complete in Spring 2018.

Future plans for retrofitting the streetlights in the remaining part of the City are currently under development. Silicon Valley Power currently uses ANSI/IESNA RP-8-00 as its standard for the design and installation of roadway lighting. To assess the performance of current roadway lighting and identify future placement, the City should develop a Public Streetlight Design Guide in partnership with Silicon Valley Power that sets light level goals to meet or exceed ANSI/IES RP-8-18. that sets light level goals.

Resources:

In 2016, the City of San Jose adopted their Public Streetlight Design Guide:

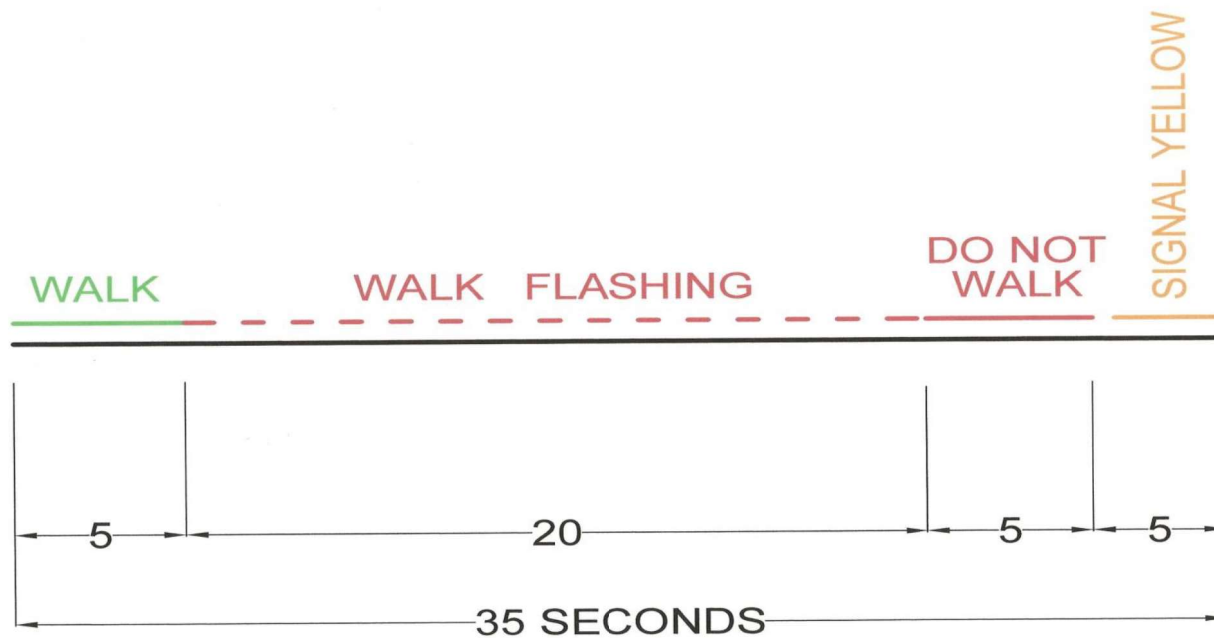
<https://www.sanjoseca.gov/DocumentCenter/Home/View/242>

ANSI/IES RP-8-18: Recommended Practice For Design And Maintenance Of Roadway And Parking Facility Lighting: <https://blog.ansi.org/2019/03/ansi-ies-rp-8-18-design-roadway-lighting/#gref>

Silicon Valley Power community projects page:

<http://www.siliconvalleypower.com/svp-and-community/projects>

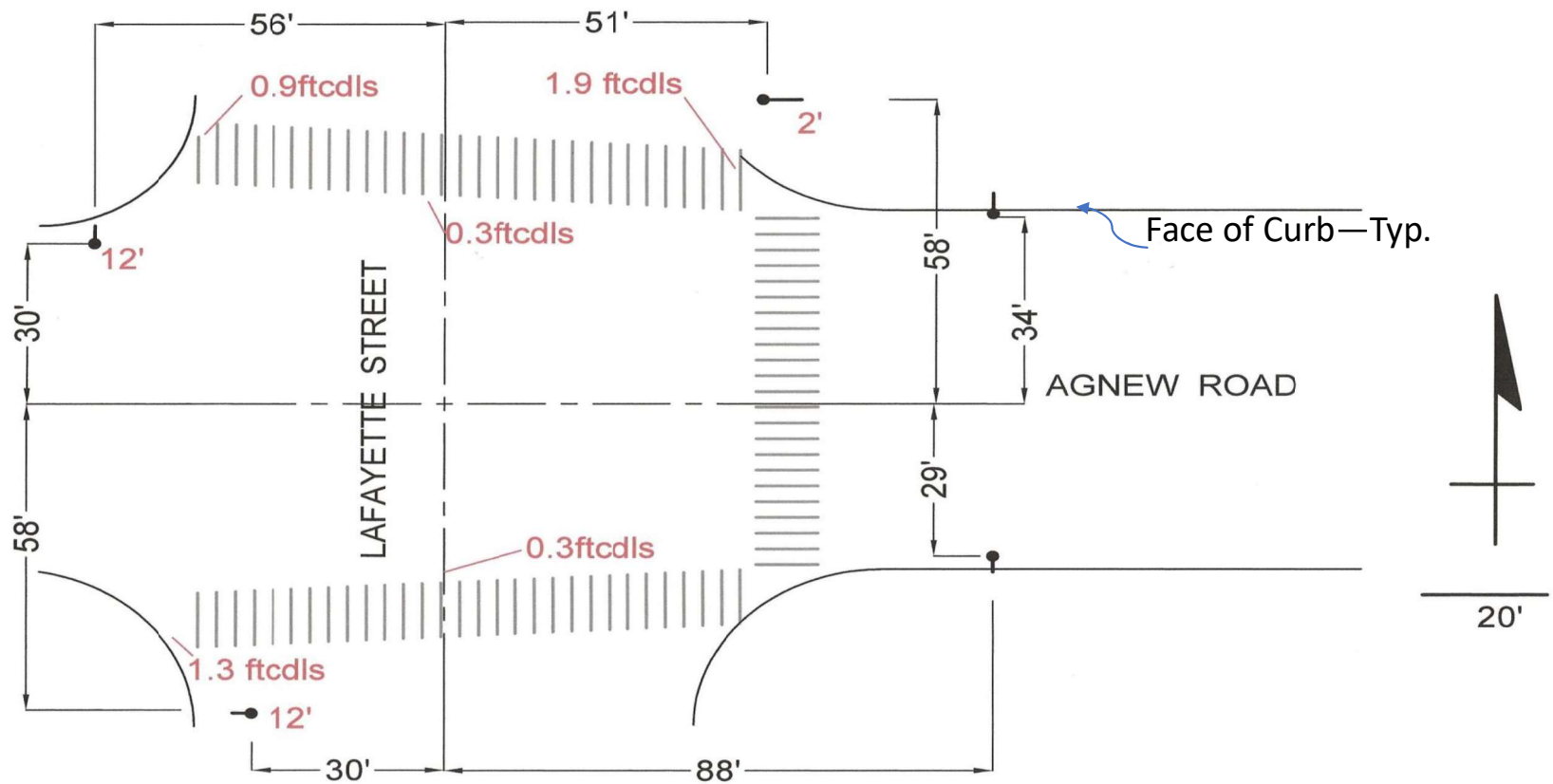
PEDESTRIAN SIGNAL HEAD TIMING ACROSS LAFAYETTE AVENUE:



NOTE:

- a. Green Vehicle Signal Light for Agnew Road
- b. Lafayette Avenue is 80' wide


PLOT OF EXISTING POLE LOCATIONS AND ARM LENGTHS AND ILLUMINATION LEVELS





**AGNEW AND LAFAYETTE
EXISTING CONDITIONS**

Legend

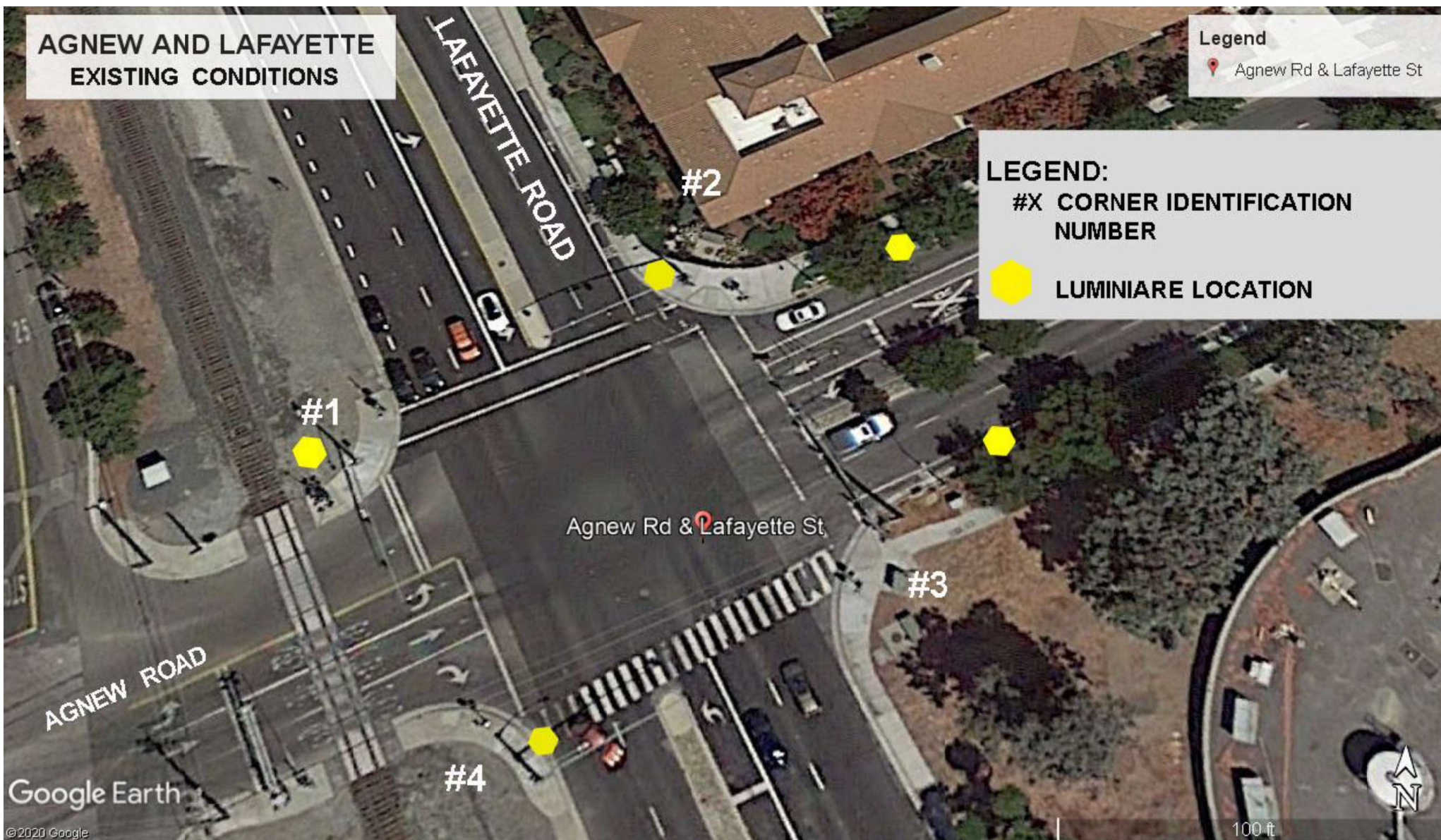
 Agnew Rd & Lafayette St

LEGEND:

**#X CORNER IDENTIFICATION
NUMBER**



LUMINIARE LOCATION



3. SUMMARY OF WORK TO MEET CURRENT STANDARDS

ISSUES AND SUGGESTIONS FOR CORRECTION

AGNEW ROAD AND LAFAYETTE AVENUE (FIRST REVIEW)

LOCATION #1 - NORTHWEST CORNER'S SIGNAL POLE FOR LAFAYETTE ROAD.

EXISTING POLE IS TALL WITHOUT A CROSSWALK LUMINAIRE. EXISTING ILLUMINATION IS 0.9 ftcfs AT THE LIP OF GUTTER.

SOLUTION: INSTALL A TYPE 15TS POLE WITH A NEW FOUNDATION AND WITH A 10' LUMINAIRE ARM AND A 14,000 LUMEN (TYPE 4 MEDIUM) LED LUMINAIRE.

NORTHWEST CORNER'S SIGNAL POLE FOR AGNEW ROAD.

THERE IS NO CROSSWALK FOR CROSSING AGNEW ROAD. THE EXISTING LUMINAIRE'S RATING IS TOO LOW.

SOLUTION: INSTALL A CROSSWALK AND REPLACE THE EXISTING LED WITH A 14,000 LUMEN (TYPE 4 MEDIUM) LED.

LOCATION #2 - NORTHEAST CORNER'S SIGNAL POLE FOR LAFAYETTE ROAD.

ILLUMINATION AT THE LIP GUTTER IS 1.9 ftcfs. THE EXISTING LUMINAIRE'S ARM IS ONLY A FEW FEET LONG.

SOLUTION: RELOCATE THE EXISTING TRAFFIC SIGNAL POLE AND INSTALL A 15' LUMINAIRE ARM AND REPLACE THE EXISTING LED LUMINAIRE WITH A 14,000 LUMEN (TYPE 4 MEDIUM) LED FIXTURE.

NORTHEAST CORNER'S TRAFFIC SIGNAL POLE CONTROLLING AGNEW ROAD.

THE EXISTING POLE IS TOO SHORT AND LACKS A LUMINAIRE.

SOLUTION: REMOVE THE EXISTING POLE AND FOUNDATION AND INSTALL A NEW TYPE 15TS WITH A NEW FOUNDATION. PROVIDE A 15' LUMINAIRE ARM AND A 14,000 LUMEN (TYPE 4 MEDIUM) LED FIXTURE.

NORTHEAST CORNER'S STREET LIGHT POLE OVER AGNEW ROAD .

IT IS NOT VERTICAL, AND THE LUMINAIRE'S ARM IS TOO SHORT FOR ILLUMINATING THE CROSSWALK.

SOLUTION: INSTALL A 15' LUMINAIRE ARM AND REPLACE THE EXISTING LUMINAIRE WITH A 8,000 LUMEN (TYPE 2 LONG) LED FIXTURE AND ADJUST THE POLE.

LOCATION #3 – SOUTHEAST CORNER'S STREET LIGHT.

THE POLE HAS AN EXISTING LED LUMINAIRE THAT HAS A RATING WHICH IS TOO LOW.

SOLUTION: INSTALL A NEW LED LUMINAIRE WITH A RATING OF 8,000. LUMENS (TYPE 2 LONG).

SOUTHEAST CORNER'S TRAFFIC SIGNAL POLE OVER AGNEW ROAD.

IT HAS A MISSING LUMINAIRE ARM AND LUMINAIRE.

SOLUTION: INSTALL A NEW 10' LUMINAIRE ARM AND INSTALL A NEW LED LUMINAIRE WHICH HAS A RATING OF 14,000 LUMENS (TYPE 4 MEDIUM).

SOUTHEAST CORNER'S TRAFFIC SIGNAL WHICH CONTROLS LAFAYETTE AVENUE.

IT DOES NOT HAVE A LUMINAIRE - 0.3ftcdls.

SOLUTION: REMOVE THE EXISTING POLE AND INSTALL A NEW TYPE 15TS POLE WITH A FOUNDATION. A 10' LUMINAIRE ARM IS REQUIRED WITH A NEW LED LUMINAIRE WHICH HAS A RATING OF 14,000 LUMEN (TYPE 4 MEDIUM).

LOCATION #4 – SOUTHWEST CORNER'S TRAFFIC SIGNAL POLE WHICH CONTROLS LAFAYETTE AVENUE.

THE POLE HAS AN EXISTING LED LUMINAIRE THAT HAS AN OUTPUT 1.3 ftcdls WHICH IS TOO LOW.

SOLUTION: REPLACE THE EXISTING LED LUMINAIRE WHICH HAS A RATING OF 14,000 LUMENS (TYPE 4 MEDIUM).

THE TRAFFIC SIGNAL THAT CONTROLS AGNEW ROAD.

IT DOES NOT HAVE A LUMINAIRE ARM AND FIXTURE.

SOLUTION: REPLACE THE EXISTING POLE WITH A TRAFFIC SIGNAL POLE TYPE 15TS THAT HAS AN 10' LUMINAIRE ARM. INSTALL A LUMINAIRE THAT HAS A RATING OF 14,000 LUMENS (TYPE 4 MEDIUM). THE INSTALLATION OF A STRIPED CROSSWALK IS ALSO REQUIRED.

COMMENT:

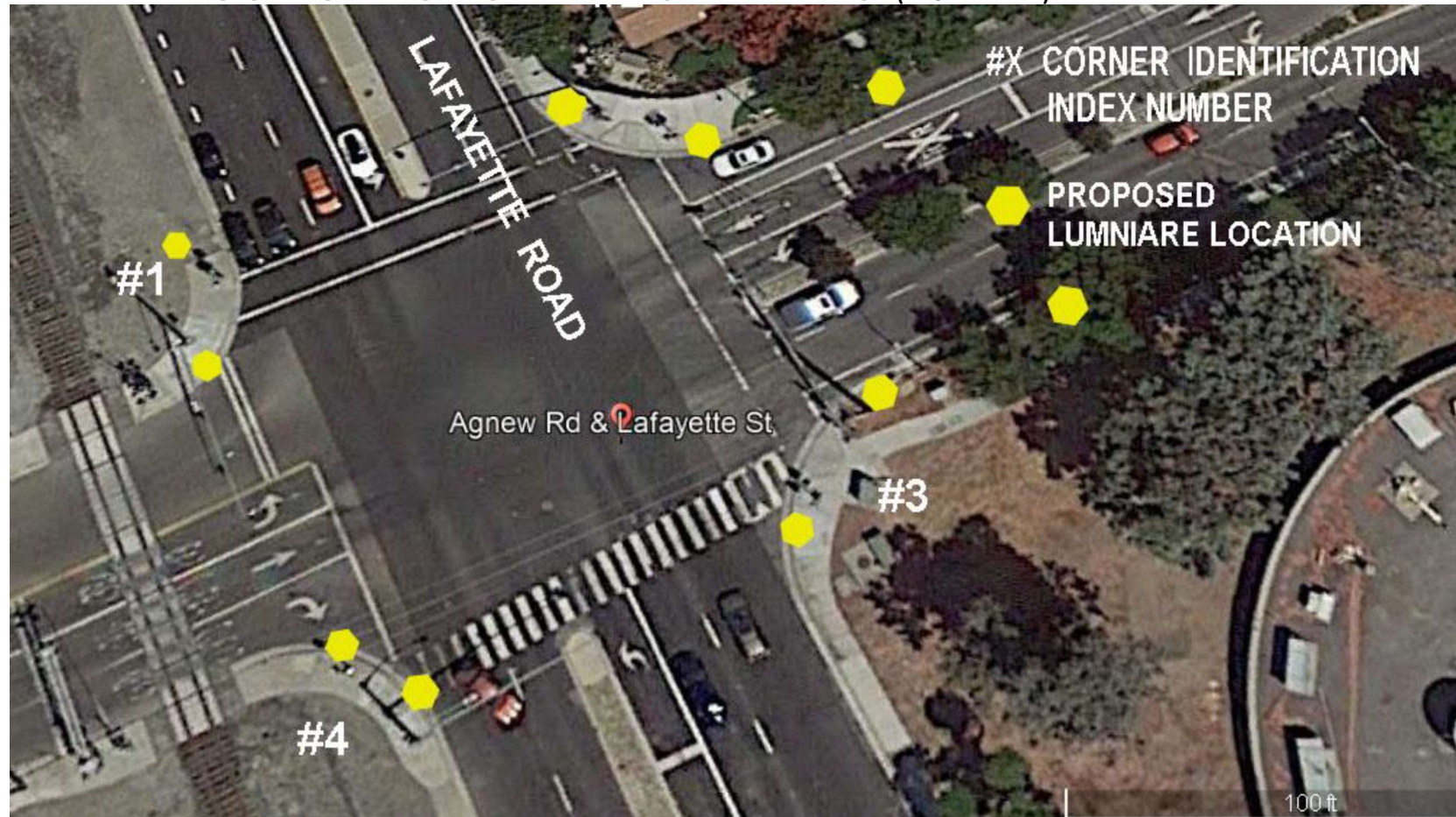
THE INSTALLATION OF STRIPED CROSSWALKS ACROSS THE STREET WEST OF LAFAYETTE AVENUE AND THE INSTALLATION OF ASSOCIATED STREET LIGHT POLES AND FOUNDATIONS ARE REQUIRED. 15' LUMINAIRE ARMS AND LUMINAIRES OF 8,000 TYPE 2 LONG LUMENS RATINGS ARE REQUIRED.

NOTE:

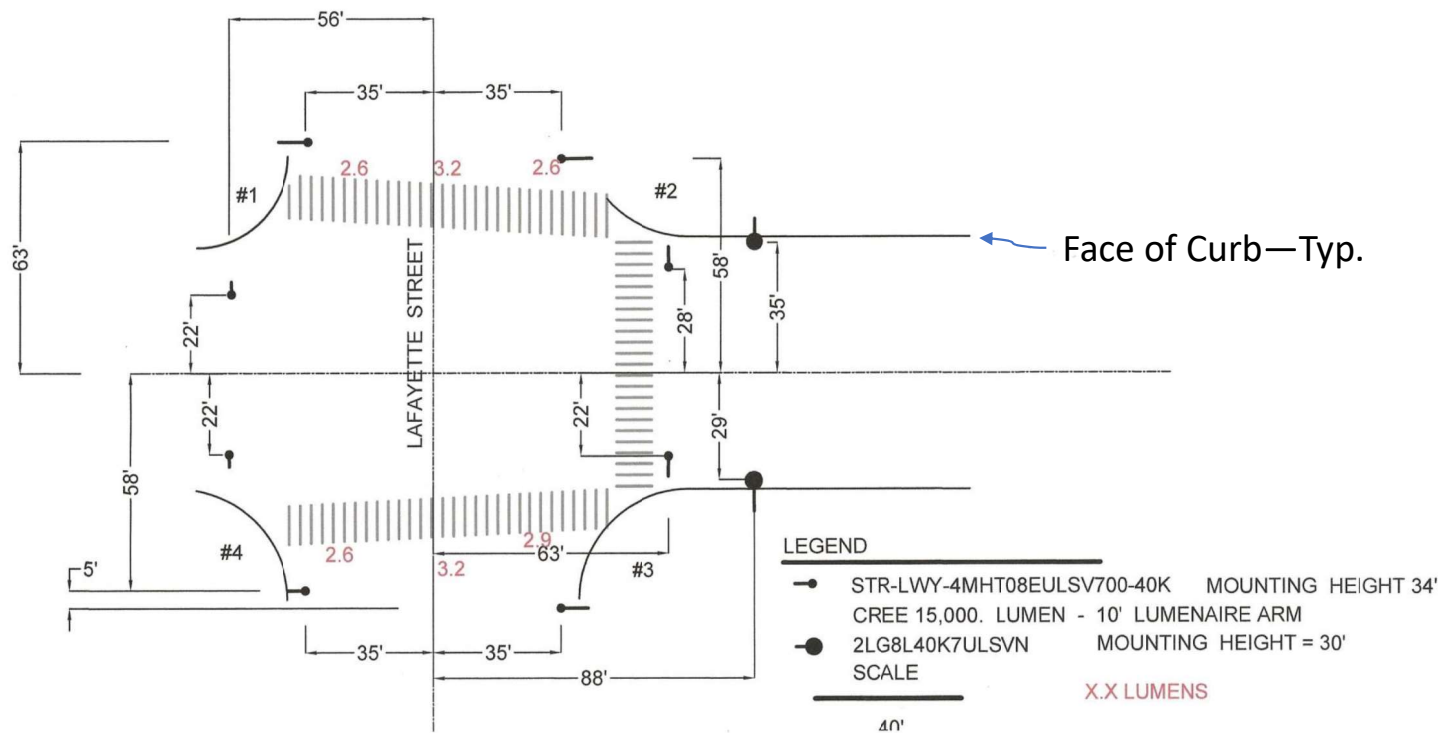
THE AGNEW ROAD AND LAFAYETTE AVENUE INTERSECTION IS ONE OF THE FEW INTERSECTIONS THAT ALLOWS PEDESTRIANS TO CROSS LAFAYETTE AVENUE AND THE ADJACENT RAILROAD TRACKS. THE NUMBER OF FORMAL RAILROAD CROSSING POINTS ALONG LAFAYETTE AVENUE IS LIMITED BY CHAIN LINK FENCING.

THE ILLUMINATION AT THE CENTER OF LAFAYETTE AVENUE AT EACH OF THE CROSSWALKS ALONG AGNEW ROAD IS 0.3ftcdls. THIS ILLUMINATION LEVEL IS TOO LOW FOR SAFETY.

NEW LAYOUT OF POLES AND LUMINAIRES (FIRST REVIEW)



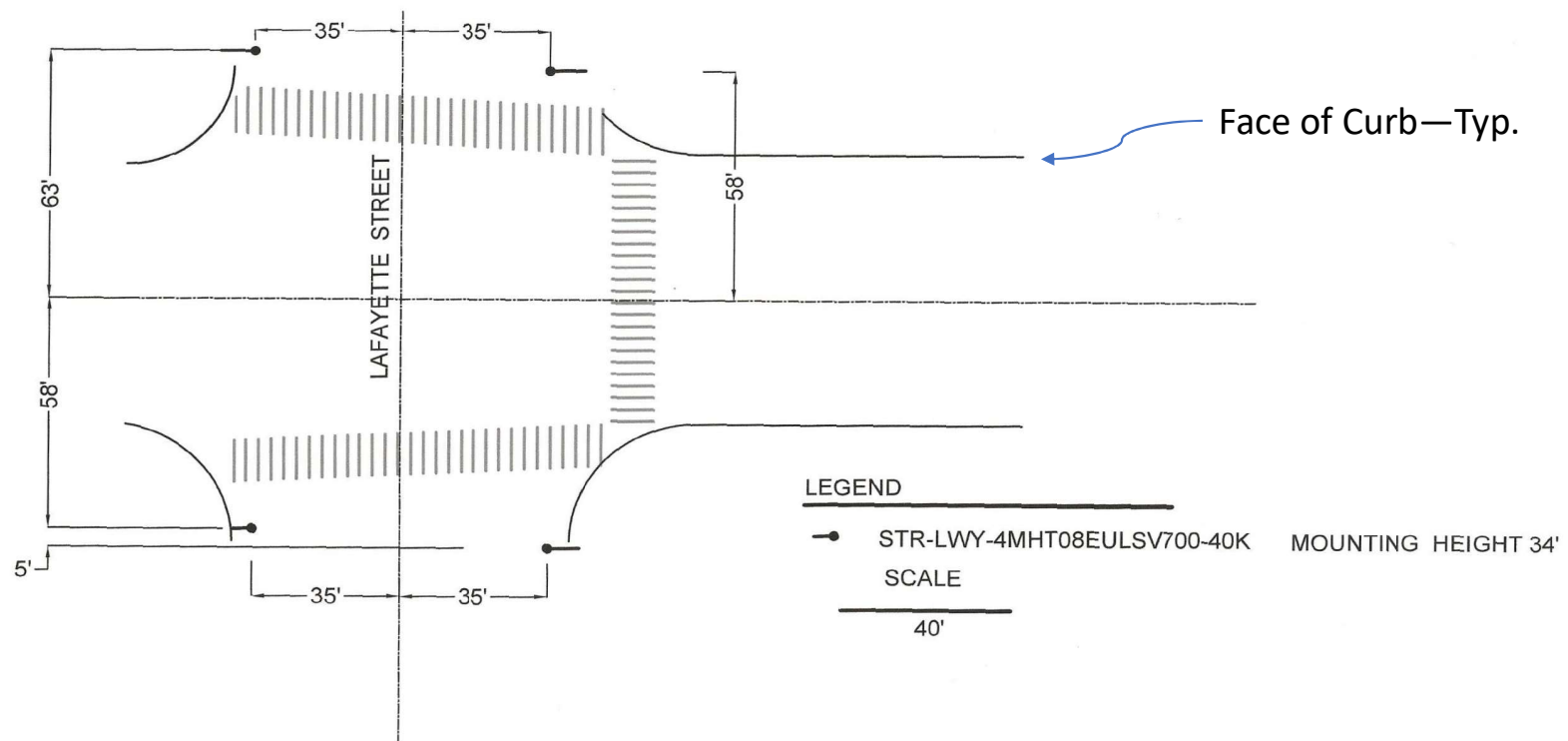
STUDY OF HORIZONTAL ILLUMINATION LEVELS EMPLOYING NEW EQUIPMENT (FIRST REVIEW)



4. SUMMARY OF WORK TO MEET THE NEW IES RP-8-18 STANDARDS

LAYOUT OF NEW POLES AND LUMINAIRE ARMS AND LUMINAIRES

2nd REVIEW



2nd REVIEW COMMENTS:

THIS REVIEW COVERS THE REDUCTION IN THE NUMBER OF ALTERNATIONS REQUIRED TO RAISE THE ILLUMINATION LEVELS TO ***IES RP-8-18 STANDARDS*** ONLY WITHIN THE CROSSWALKS ACROSS LAFAYETTE AVENUE. THE EXISTING POLES WHICH ARE NOT DEPICTED ON THE EXHIBIT ARE TO REMAIN UNALTERED.

LOCATION #1: NORTHWEST CORNER'S SIGNAL POLE LAFAYETTE ROAD.

THE EXISTING SIGNAL POLE FOR LAFAYETTE AVENUE IS TO BE REPLACED WITH A NEW TYPE 15TS POLE WITH A 10' LUMINAIRE ARM AND 15,000 LUMEN (TYPE 4 MEDIUM) LED FIXTURE.

LOCATION #2: NORTHEAST CORNER'S SIGNAL POLE FOR LAFAYETTE ROAD

THE EXISTING SIGNAL POLE LUMINAIRE ARM IS TO BE REPLACED WITH A 10' LUMINAIRE ARM AND A NEW LUMINAIRE FIXTURE WITH 15,000 LUMEN (TYPE 4 MEDIUM) RATING.

LOCATION #3: SOUTHEAST CORNER'S SIGNAL POLE ACROSS LAFAYETTE AVENUE

THE EXISTING SIGNAL POLE IS TO BE REPLACED WITH A TYPE TS15 POLE WITH FOUNDATION WITH A 15,000 LUMEN (TYPE 4 MEDIUM) FIXTURE AND A 10' LUMINAIRE ARM.

LOCATION #4: SOUTHWEST CORNER'S SIGNAL POLE

THE EXISTING SIGNAL POLE LUMINAIRE ARM IS TO BE REPLACED WITH A 10' LUMINAIRE ARM AND A 15,000 LUMEN (TYPE 4 MEDIUM) FIXTURE IS TO BE INSTALLED.

4d. 2nd review standards

Lighting Equipment and Layout

While crosswalks are traditionally lit from directly above, recent FHWA guidance and other research recommend positioning lights ahead of crosswalks in order to improve visibility of pedestrians to drivers. This approach provides positive contrast for the pedestrians against a darker background. The 2010 MnDOT Roadway Lighting Design Manual recommends placing light poles 1 to 30 feet before the crosswalk and lighting roundabouts from the outer edge of the roadway to aid in providing this positive contrast.

Vertical Illuminance

Vertical illuminance is the amount of illuminance that lands on a vertical surface. The units and properties are the same as horizontal illuminance. As it relates to roadway lighting, vertical illuminance is a reasonable criterion for determining the amount of light landing on pedestrians. It is also used as a criterion in determining adequate illumination for facial recognition. For roadway applications, vertical illuminance is most often used at a 1.5 meter height above the roadway or sidewalk. The 1.5 meter height is a commonly used metric in outdoor criteria as the height of a pedestrian's face.

VALUES:

2 Foot candles has been determined to be an adequate standard

Uniformity ratios force the maximum and minimum illumination values to be close to each other.