

Gustavo Mendez, Chair
Gilbert Cuevas, Vice Chair
Richard Corvera-Hernandez, Commissioner
Patricia Covarrubias, Commissioner
Vacant, Commissioner



CUDAHY CITY
COUNCIL CHAMBERS
5240 Santa Ana Street
Cudahy, CA 90201
Phone: (323) 773-5143
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AGENDA

A SPECIAL MEETING OF THE CUDAHY PLANNING COMMISSION Monday, February 24, 2020 – 6:30 P.M.

*"Members of the Public are Advised that all **PAGERS, CELLULAR TELEPHONES** and any **OTHER COMMUNICATION DEVICES** are to be **turned off** upon entering the City Council Chambers." If you need to have a discussion with someone in the audience, kindly step out into the lobby.*

Written materials distributed to the Planning Commission within 24 hours of the City Council meeting are available for public inspection immediately upon distribution in the City Clerk's Office at City Hall located at 5220 Santa Ana Street, Cudahy, CA 90201.

In compliance with the Americans with Disabilities Act (ADA) if you need special assistance to participate in this meeting, you should contact the City Clerk's Office at (323) 773-5143 at least 24 hours in advance of the meeting.

1. CALL TO ORDER

2. ROLL CALL

Commissioner Corvera-Hernandez
Commissioner Covarrubias
Vice Chair Cuevas
Chair Mendez

3. PLEDGE OF ALLEGIANCE

4. PRESENTATIONS

A. None.

5. PUBLIC COMMENTS

(Chairperson: This is the time set aside for citizens to address the Planning Commission on matters relating to Commission business. When addressing the Commission please speak into the microphone)

and voluntarily state your name and address. **Each person will be allowed to speak only once and will be limited to five (5) minutes.** The proceedings of this meeting are recorded on audio CD.

6. WAIVE FULL READINGS

A. Approval to waive the full reading of all resolutions on the agenda and declare that said titles which appear on the public agenda shall be determined to have been read by title only.

Recommendation: To waive the full text reading of all resolutions on the agenda.

7. PUBLIC HEARING

A. **7801-7835 Otis Avenue – Development Review Permit No. 41-532 - Consideration of a development review permit to allow the design, site layout, and construction of a new state of the art public charter school within the Low Density Residential (LDR) Zone, pursuant to Section 20.84.170 of the City’s Zoning Code.**

Recommendation: The Planning Commission of the City of Cudahy is recommended to approve development review permit no. 41-532 to allow the design, site layout, and construction of a new state of the art public charter school for the project located at 7801-7835 Otis Avenue.

B. **5306 Clara Street – Development Review Permit No. 41-518 - Consideration of a development review permit to allow the design, site layout, and construction of a 5-unit multifamily residential development within the Medium Density Residential Zone, pursuant to Section 20.84.170 of the City’s Zoning Code.**

Recommendation: The Planning Commission of the City of Cudahy is recommended to open the public hearing, take public testimony and continue the item to the next regularly scheduled Planning Commission Meeting on February 17, 2020.

C. **4936-38 Live Oak Street – Development Review Permit No. 41-522 and Conditional Use Permit No. 38-369 - Consideration of a development review permit to allow the design, site layout, and construction of a 58-unit multifamily residential (apartments) development and a conditional use permit to allow a 75 percent density bonus of the number of “base” units allowed in the underlying zone, and incorporating affordable housing units, within the High Density Residential Zone, pursuant to Section 20.84.170 and 20.52.300 of the City’s Zoning Code.**

Recommendation: The Planning Commission of the City of Cudahy is recommended to:

1. Approve Development Review Permit No. 41-522 to allow the design, site layout, and the construction of a 58-unit multifamily residential development; and
2. Approve Conditional Use Permit No. 38-369 to allow a 75 percent density bonus of the number of “base” units allowed in the underlying zone and incorporating affordable housing units.

8. BUSINESS SESSION

9. COMMISSION BUSINESS

10. ADJOURNMENT

I Salvador Lopez Jr., hereby certify under penalty of perjury under the laws of the State of California that the foregoing agenda was posted at Cudahy City Hall, Bedwell Hall, Clara Park, Lugo Park, and the City's Website not less than 24 hours prior to the meeting. A copy of said Agenda is on file in the Community Development Department.

Dated this 20th Day of February, 2020



Salvador Lopez Jr.
Community Development Director



AGENDA REPORT

MEETING DATE: February 24, 2020

TO: Honorable Chair & Planning Commission Members

FROM: Salvador Lopez, Interim Community Development Director

Subject: Development Review Permit No. 41-532 and Conditional Use Permit No. 38-372, to allow the construction of a 67,148 square foot charter school located at 7801-7835 Otis Avenue (APN 6225-026-0201/002/003/013/014).

RECOMMENDATION:

Staff recommends that the Planning Commission of the City of Cudahy (the "City"):

1. Approve Development Review Permit No. 41-532 (DRP 41-532) to allow the design, site layout, and construction of a new 67,148 square foot site of the art charter school;

BACKGROUND/PROJECT DESCRIPTION:

The subject property is located on an approximately 95,832 square foot (2.2 acres) lot located at 7801-7835 Otis Avenue in the City of Cudahy in the Low Density Residential (LDR) Zone. The site is currently vacant with demolition of the former Covert Iron Works and an auto shop already complete. The immediate area is developed with a mix of multi-family and single-family residential land uses, as well as Lugo Park and Recreation Center directly to the east.

The applicant, Etmny Cornejo, proposes to construct a 67,148 square foot elementary and middle charter school (Kipp Pueblo Unido School). According to the plans submitted to the city's Planning Division the development will consist of a single two-story structure with a subterranean parking garage. The building would house an elementary and middle school, including fifty classrooms, offices, bathrooms, multi-function rooms, and associated outdoor accessories like a basketball court and playground equipment. There are 99 parking spaces proposed for the site in order to fulfill the zoning code's requirement of one parking space for every classroom on site plus one for every employee.

Vehicular ingress to the Project's drop-off/pick-up area and subterranean parking garage will be provided via one driveway along the west side of Otis Avenue approximately midway between Olive Street and Elizabeth Street. The ingress driveway is proposed to accommodate right-turn vehicular ingress only (i.e., right-turn egress and left-turn ingress and egress movements will not be permitted). Signage on Otis Avenue prohibiting northbound left-turn ingress movements during drop-off/pick-up periods will be provided. Additionally, staff and parents/caregivers will be provided with information regarding the site access scheme prior to the start of the school year. Therefore, motorists destined to the Project will be aware of the right-turn only ingress operation at the Otis Avenue driveway and will plan their travel routes in advance so as to arrive at the Project site via southbound Otis Avenue. Traffic

destined to the Project to drop-off or pick-up students will enter the proposed Otis Avenue ingress driveway, travel within the site in the proposed drop-off/pick-up lane, complete the student drop-off or pick-up, and then exit onto Olive Street via the proposed driveway at the northwesterly portion of the Project Site. Traffic destined to the Project to access the subterranean parking garage will enter the Otis Avenue driveway and travel down the ramp to the parking garage. Traffic departing the Project from the parking garage will travel up the ramp at the northwesterly portion of the Project Site and exit via the proposed Olive Street egress driveway.

Vehicular egress from the Project’s drop-off/pick-up area, as well as from the subterranean parking garage, will be provided via one driveway along the south side of Olive Street, at the northwest portion of the Project Site. The Olive Street driveway is proposed to accommodate vehicular egress movements only (i.e., left-turn and right-turn ingress movements are not permitted).

The proposed student drop-off/pick-up area destined to the Project to drop-off or pick-up students will enter the site via the proposed ingress driveway on Otis Avenue, travel within the site in the proposed drop-off/pick-up lane, complete the student drop-off or pick-up for Grades 5-8, continue northbound within the site in the proposed drop-off/ pick-up lane, complete the student drop-off or pick-up for Grades K-4, and then exit via the northwesterly driveway onto Olive Street. The proposed drop-off/pick-up lane can accommodate approximately 26 vehicles queued within the site. The proposed on-site drop-off/pick-up area lane is approximately 20 feet in width, which is sufficient to accommodate one lane of queued vehicles, plus a bypass lane to allow vehicles to bypass the queue should there be delay related to the passenger loading/unloading of one or more of the queued vehicles.

This configuration will provide efficient and safe ingress and egress from the site while maintaining less vehicular conflict points to both Otis and Olive Street. These driveways and additional emergency access as shown on the site plan have been reviewed and approved by the Los Angeles County Fire Department.

The project architecture is modern contemporary. Treatments incorporate a blend of contemporary and traditional architectural forms and details which include a flat façade, hip style roof, plaster walls, and articulated facades such as inset windows and doors, offset/projected wall features and recessed entryways. Proposed building colors incorporate an earth-tone palette with a dark grey smooth stucco finish, brown trims, and decorative veneers.

The buildings would be set back from the eastern side of the property by 15 feet, the rear setback by 20 feet, the western setback by 15 feet, and the front setback by 20 feet. A six-foot tall, ivy-covered, concrete-masonry-unit (CMU) wall would be constructed along the rear perimeter of the property. A preliminary landscape plan has been submitted showing landscape areas on the buildings’ perimeter and in interior open space areas and within the front yard setback. A more detailed plan will be submitted with the formal plan check submittal. Project lighting would consist of security lighting and wall lights on the building perimeters, using LED fixtures. All lighting would be designed to avoid light spillage to neighboring properties.

A minimum number of on-site parking spaces is required for the property, based on the number of classrooms and employees. The table below identifies the number of spaces required by the zoning code.

Number of classrooms plus number of employees	Required parking spaces	Parking spaces provided
99	99	99

The applicant has provided a Traffic Impact Study (See Attachment #4) analyzing the proposed development. This traffic impact analysis has been prepared to evaluate the potential impacts to the local street system. Twenty intersections were identified and analyzed in order to determine changes in operations following construction and occupancy of the proposed Project. Application of the impact threshold criteria consulted with the City of Cudahy indicate that none of the 20 study intersections would be significantly impacted by the forecast Project traffic. Incremental, but not significant, impacts are noted at the 20 study intersections evaluated in this analysis. As no significant impacts are expected due to the proposed Project, no traffic mitigation measures are required or recommended for the study intersections. A VMT assessment has been prepared in accordance with SB 743 for informational purposes. Based on available census and VMT data provided by Caltrans, the Project VMT is determined to be 35.97 miles per Employee.

ANALYSIS & DISCUSSION:

General Plan and Zoning. The General Plan designates the site and surrounding area as “Low Density Residential” as noted above, the property’s zoning is Low Density Residential (LDR). Table 1 below shows the project site and surrounding area’s zoning and land uses.

**Table 1
Zoning and Land Use**

	ZONING	LAND USE
PROJECT SITE	LDR	Previously developed, rough graded
NORTH	LDR	Single-Family Residential
EAST	City Parks	Lugo Park
SOUTH	City Parks	Parklet
WEST	LDR	Single-Family Residential

The proposed project meets General Plan and Zoning standards for use (described above), building height, and front and side setbacks. Table 2 below compares the project’s characteristics with development standards.

Table 2
Development Standards: Required vs. Proposed Project

	General Plan	Zoning	Density	Height	Setbacks	Min Floor Area	Parking
Required	LDR	LDR	15 du/acre maximum	2 stories; 35 feet	Front: 20 ft Side: 5/15 ft. Rear: 10 ft.	N/A	Greater than or equal to the number of classrooms plus employees (99)
Proposed	LDR	LDR	-	1 story	Front: 20 ft. Side: 15 ft. Rear: 10 ft.	N/A	99
Consistent?	YES	YES	N/A	YES	YES	N/A	YES

Table 2 shows that the proposed development complies strictly with all applicable development standards for development of the proposed use in the LDR zone, where applicable.

REQUIRED FINDINGS:

DEVELOPMENT REVIEW PERMIT

CMC § 20.84.210, Basis for Approval or Denial of a Development Review Permit.

- **20.84.210(a) The project is consistent with the City of Cudahy General Plan, any applicable specific plan, and any plan of another governmental agency made applicable by statute or ordinance.**

Support for Finding: The project is compatible with the City of Cudahy's General Plan because it proposes a coherent development incidental to residential use in the Low-Density Residential zone.

- **20.84.210(b) The height, bulk, and other design features of structures are in proportion to the building site, and external features are balanced and unified to present a harmonious appearance.**

Support for Finding: There is sufficient area in the 20-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences and parks that also face the Otis Avenue. Accordingly, the project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.

- **20.84.210(c) The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses.**

Support for Finding: The existing surrounding properties include single story and two-story single-family residents, a park, and a parklet. The proposed development includes features more consistent with residential and recreational areas, particularly when compared to the previous industrial uses on the site. The proposed surface articulations on the proposed structure itself, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.

- **20.84.210(d) The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development.**

Support for Finding: The proposed site layout presents a balanced plan that relates to similar structures along Otis Avenue and surrounding streets. The development's orientation beyond the setback helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for landscaping, including the front setback, the rear setback, the private open space and common areas. The driveway entrances permit good visibility along the length of the project interior and will have security lighting for safety.

- **20.84.210(e) The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features.**

Support for Finding: The proposed development requires precise grading; the site is previously developed, graded, and the existing structures have been demolished. Some of the lot is currently dirt and does not contain any trees. However, the rest of the site is urbanized, flat and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs.

- **20.84.210(f) The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site.**

Support for Finding: The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.

- **20.84.210(g) Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner which is in harmony with the design of the structures and grounds.**

Support for Finding: There are no proposed exterior mechanical equipment, machinery, or service areas except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning code requirements for multi-family developments. Other mechanical equipment must comply with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.

- **20.84.210(h) The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character of such property.**

Support for Finding: The proposed project would re-develop a site that was previously industrial and therefore not compatible with surrounding residential and park uses. By introducing new, up-to-date development in the form of a school with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

Additional Findings for Approval:

- **There are adequate provisions for public and emergency vehicle access, fire protection, sanitation, water, and public utilities and services to ensure that the proposed development would not be detrimental to public health and safety.**

Support for Finding: Planning staff and the Los Angeles County Fire Department reviewed the site plan. With application of the conditions of approval, the proposed site plan complies with the City's Zoning Code and Fire Department requirements related to vehicle access, fire protection, sanitation, water, and public utilities and services.

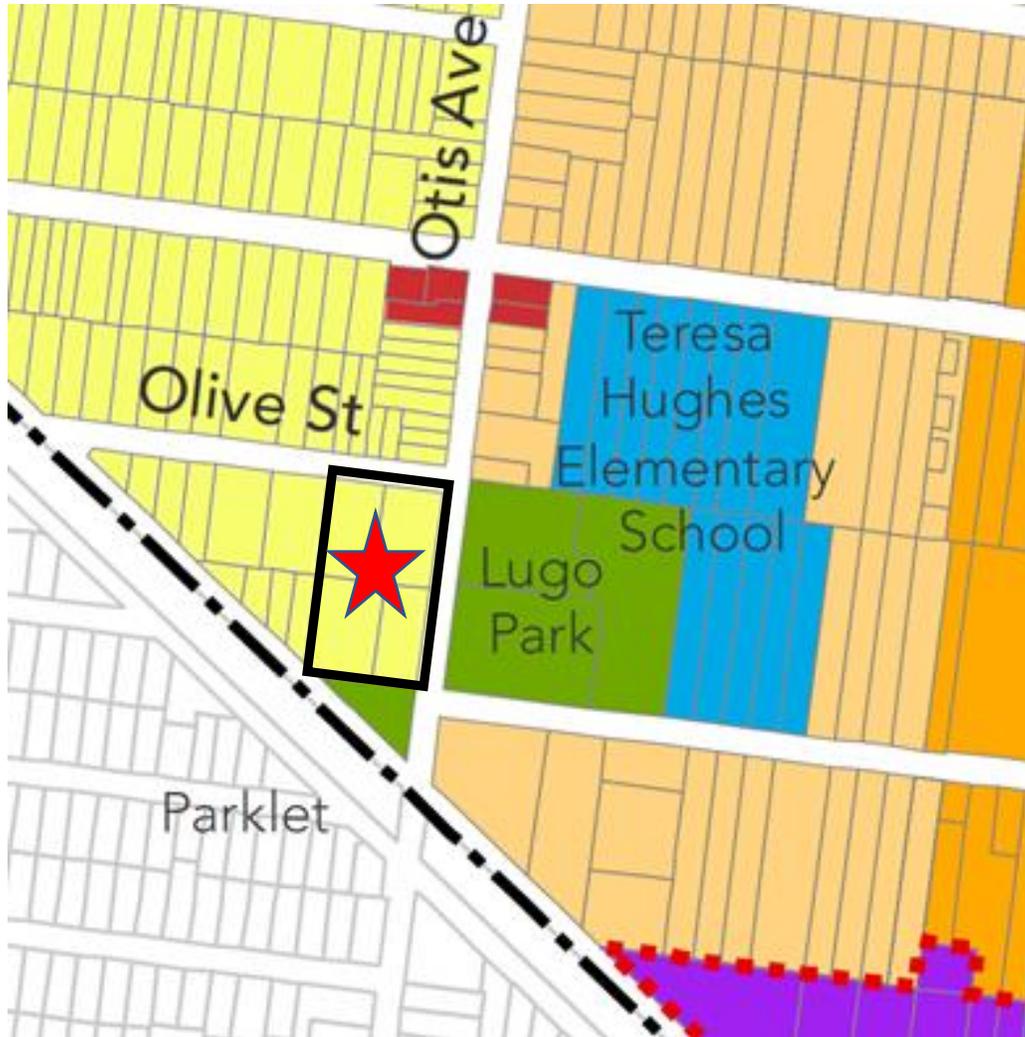
CEQA (CALIFORNIA ENVIRONMENTAL QUALITY ACT):

In accordance with the provisions of the California Environmental Quality Act (CEQA), an environmental analysis has been completed for this case. As a result of that analysis, it has been determined that this case is exempt from the requirements of CEQA and no further environmental documentation will be required, pursuant to Article 18, Statutory Exemptions Section 15268, *Ministerial Projects*, of the California Environmental Quality Act.

ATTACHMENTS:

1. Location Map
2. Proposed Development Plans
3. Resolution No. PC 20—05
4. Traffic Impact Study

LOCATION MAP



7801 – 7835 Otis Avenue

RESOLUTION NO. PC 20-05

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CUDAHY APPROVING DEVELOPMENT REVIEW PERMIT NO. 41-532 TO ALLOW THE CONSTRUCTION OF A CHARTER SCHOOL LOCATED AT 7801-7835 OTIS AVENUE. APPLICANT: ETMNY CORNEJO.

WHEREAS: The applicant, Etmny Cornejo, requests approval of a Development Review Permit and Conditional Use Permit to allow the design, site layout, and the construction of a charter school;

WHEREAS: The subject property is located at 7801-7835 Otis Avenue in an area that is designated by the Cudahy General Plan and by the Cudahy Zoning Map as Low Density Residential; and

WHEREAS: The subject property is approximately 95,832 square feet in area, and the LDR zone allows public elementary and secondary schools as a permitted use; and

WHEREAS: This matter was duly posted and set for a special public hearing for February 24, 2020 at 6:30pm consistent with the City of Cudahy's Zoning Ordinance procedures for Development Review Permits.

NOW THEREFORE, the Planning Commission of the City of Cudahy hereby resolves:

SECTION 1. In accordance with the provisions of the California Environmental Quality Act (CEQA), an environmental analysis has been completed for this case. As a result of that analysis, it has been determined that this case is exempt from the requirements of CEQA and no further environmental documentation will be required, pursuant to Article 18, Statutory Exemptions Section 15268, *Ministerial Projects*, of the California Environmental Quality Act.

SECTION 2. After considering the proposal on the basis for approval or denial of Development Review Permit 41.532 stated in Chapter 20 of the Cudahy Municipal Code, the Planning Commission finds as follows:

DEVELOPMENT REVIEW PERMIT 41.532

- A. The project is compatible with the City of Cudahy's General Plan because it proposes a coherent, incidental use to residential development in the Low-Density Residential General Plan designation and the Low-Density Residential zone.
- B. The height, bulk, and other design features of the Project's structures are in proportion to the building site, and external features are balanced and unified so as to present a harmonious appearance. The proposed development's structure is one story in height, similar to or lower than other structures within the immediate neighborhood. There is sufficient area in the 20-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences that also face the street. Accordingly, the project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.

- C. The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses. The existing surrounding properties include single story and two-story single-family and multi-family residences as well as a city park. The proposed development includes one single-story charter school with associated recreational areas, landscaping, and parking, consistent with the height, bulk, and other design features found in the surrounding area. The proposed surface articulations, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.
- D. The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development. The proposed site layout presents a balanced plan that relates to other structures along surrounding streets more so than the previous industrial land uses on the site. The development's orientation beyond the deep setback and the driveway helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for visitor parking, landscaping, including the front setback, the rear setback, the private open space and common areas. The driveway permits good visibility along the length of the project interior and will have security lighting for safety.
- E. The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features. The proposed development requires minor grading and removal of some existing shrubs. Previous structures on the site have already been demolished. Half of the lot is currently dirt and does not contain any trees. However, the rest of the site is urbanized, flat and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs, which would replace those that would be removed.
- F. The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site. The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.
- G. Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner that is in harmony with the design of the structures and grounds. There are no proposed exterior mechanical equipment, machinery, or service areas except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning code requirements for multi-family developments. Other mechanical equipment must comply with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.
- H. The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character or value of such property. The proposed project would re-develop a former industrial site that lies between occupied

single and multiple-family residences and a park. By introducing new, up-to-date construction with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

SECTION 3. Based upon the findings contained in this Resolution and on all other written and oral evidence in the record, the Planning Commission hereby approves Development Review Permit No. 41-532, subject to the conditions of approval set forth below:

1. The applicant, its successors in interest, and assignees, shall indemnify, protect, defend (with legal counsel reasonably acceptable to the City), and hold harmless, the City, and any agency or instrumentality thereof, and its elected and appointed officials, officers, employees, and agents from and against all liabilities, claims, actions, causes of action, proceedings, suits, damages, judgments, liens, levies, and disbursements (collectively, "Claims") arising out of or in any way relating to this project, any discretionary approval granted by the City related to the development of the project, or the environmental review conducted under the California Environmental Quality Act, Public Resources Code section 21000 *et seq.*, ("CEQA") for the project. If the City Attorney is required to enforce any conditions of approval, the applicant shall pay for all costs of enforcement, including attorney's fees.
2. Subcontractors hired to improve the physical structures of the building shall obtain a contractor's business license from the City Business License Department and submit proof of workers' compensation insurance to the City Building Department, before the issuance of any permits.
3. All conditions shall be binding upon the applicants, their successors and assigns, shall run with the land, shall limit and control the issuance and validity of certificate of occupancy, and shall restrict and limit the construction, location, and use and maintenance of all land and structures within the development.
4. The site shall be kept in a neat manner at all times and any landscaping shall be continuously maintained in a healthy and thriving condition.
5. Any changes in building textures, materials, and colors on the exterior walls are subject to planning approval. A developer is required to submit samples of all exterior materials for approval prior to the issuance of building permits.
6. Construction shall conform to the site plan on file with the Community Development Department and as approved by the Planning Commission.
7. The Developer shall verify in writing that there is sufficient water service for the proposed development. Also, the developer agrees to install any equipment, lines or other necessary improvement to ensure that there will be sufficient water service for the proposed development.
8. A complete set of plans including the sewer, drainage, grading, and erosion control plans, which accurately depict the location of the proposed structures, driveways, and all other elements of the development, shall be submitted as part of the plan check submittal.

9. The applicant shall comply with all conditions set forth by the Los Angeles County Fire Department for this application.
10. Anti-graffiti substances shall be used on both sides of the perimeter walls of the subject property.
11. Applicant shall remove graffiti within 24 hours of application. In the event graffiti is not removed within 24 hours, the applicant grants access and indemnifies the City to enter the property to abate graffiti according to CMC Sections 15.20.150 and 15.20.
12. Utility equipment including and not limited to electricity, cable, or telephone equipment must be placed underground. Each unit shall have separate sewer and water lines.
13. Pursuant to the National Pollutant Discharge Elimination System (NPDES) Permit requirements, and City of Cudahy Municipal Code Section 11-2: Storm Water and Urban Runoff Pollution Control all construction projects of less than 1 acre are required to meet a minimum of water quality protection (i.e., Owner's Certification of Compliance with Minimum Requirements Form and/or Wet Weather Control Plan).
14. As part of the plan check submittal, written verification from the local water authority that there is sufficient water service for the additional dwelling units, as well as fire suppression being provided without interruption to residences.
15. A Lighting Plan shall be submitted with construction drawings to Building & Safety for plan check.
16. Landscaping and irrigation plans, which provide for adequate landscaping shall be submitted to the Community Development Department for approval as part of plan check submittal. All types of plants selected, and required watering systems for such landscaping, shall, to the extent possible, conserve water and shall be consistent with any water conservation ordinance enacted by the City.
17. All roof-mounted equipment shall be adequately and decoratively screened and shall not be visible from the street.
18. The locations of air-conditioning condensers shall be shown on the site plan and shall not be visible from the street.
19. All building materials and plants selected shall be comparable to the proposed development.
20. The developer shall obtain necessary permits to repair or improve any curb, gutter or sidewalk damaged due to the construction process.
21. The electrical transformer shall be adequately and decoratively screened from view. Dense landscaping shall be used as screening materials. The applicant shall provide the details with the set of building plans to illustrate this requirement.
22. The applicant shall include all general notes on the plans submitted for plan check as required. The floor plans and elevation drawings shall reflect the same information. The

developer is required to check said plans for accuracy and make sure plans are drawn to scale and corrections are made as necessary prior to the issuance of permits.

23. The developer shall not deviate from any of the approved plans without prior approval from the Director of Community Development or the Planning Commission.
24. The developer shall submit a complete listing of all subcontractors used for the project. Each subcontractor shall obtain a contractor's business license from the City's Business License Department and submit proof of workers' compensation insurance to the City of Cudahy Building Department, before the issuance of any permits.
25. Contractors hired for the project must guarantee that safe and convenient school pedestrian routes are maintained. This would pertain to the arrival and dismissal times of each school day. Traffic controls (signs) shall be installed as needed to ensure safe routes to school. Construction vehicle trips scheduling shall be sequenced to minimize conflicts with pedestrians, school buses and cars.
26. The applicant shall comply with all conditions set forth by the Los Angeles Unified School District for this application.
27. Increased noise levels will be mitigated by the limitation of construction activities to not earlier than 7:00 A.M. and not later than 6:00 P.M. To reduce temporary construction noise contractors hired for the project shall implement BMPs such as providing advance notification of construction to surrounding land uses, ensuring that equipment is properly muffled, placement of noise sources away from residences, implementing noise attenuation measures, and generally conduct construction in compliance with City of Cudahy Municipal Code Article 23: Environmental Performance Standards.
28. All City Fees, i.e., plan check, building permit fees, school fees, Quimby fees, CC&R review, etc., shall be paid by the applicant prior to the submittal of the plans to the Building and Safety Department".
29. The applicant shall adhere to all requested mitigation measures provided by the Los Angeles Unified School District.
30. The applicant shall adhere to all requested mitigation measures provided by the Traffic Impact Study.
31. If new connections or (upgrades) to the sewer system are needed, developer to coordinate directly with Los Angeles County. If so, encroachment and excavation permit is required by the City of Cudahy. Contact Engineering Department for submittal requirements. Public Works Permits are issued only once a week (Tuesdays from 1 pm to 3 pm).
32. If new connections or (upgrades) to the water system are needed, developer to coordinate directly with private Mutual Water Company providing service in the project area. If so, encroachment and excavation permit is required by the City of Cudahy.
33. If driveways and/or sidewalks are to be modified, encroachment and excavation permit is required by the City of Cudahy, please contact Engineering Department for submittal requirements.

34. Improvements and/or reconstruction work within the public right of way (street, sidewalks, driveways, ADA ramps, etc.) must be per the Standard Plans & Specs for Public Works Construction, City of Cudahy Street Repair Guidelines, Caltrans, MUTCD and/or other applicable code.
35. Reconstruction of sidewalk/driveway project frontage shall be required for code compliance and/or construction activity. This shall include slurry seal application and traffic striping restoration.
36. Development improvements and improvements within the public right of way shall follow and implement NPDES/MS4 requirements as applicable.
37. Developer/ Contractor to implement Best Management Practices during construction phase. Developer to submit BMPs plan for City's approval.
38. Development improvements and improvements within the public right of way shall follow and implement the City's LID Policy and Resolution as applicable.
39. Improvements within the public right of way shall follow and implement the City's Greens Streets Policy and Resolution as applicable.
40. Improvements within the Public right of Way shall follow and implement the City's Complete Streets Policy and Resolution as applicable.
41. The applicant shall sign and notarize an Affidavit of Acceptance of Conditions, which acknowledges all of the conditions imposed herein and the applicant's acceptance of this Permit subject to those conditions.
42. The rights granted under DRP No. 41-532 may be modified or revoked by the Planning Commission should it be determined that the proposed uses or conditions under which the project is being operated or maintained is detrimental to the public health, welfare or materially harmful to property or improvements in the vicinity, if the property is operated or maintained to constitute a public nuisance or is a contributor to blight, or if the uses on the property are changed from the uses expressly approved herein.
43. The rights granted under DRP No. 41-532 shall expire within one (1) year of the date of approval by the Planning Commission unless proper building permits have been obtained or the applicant(s) applies for and is granted an extension of time. No extension of time will be considered unless the application for an extension is filed at least 30 days prior to the expiration. An extension will not be granted if conditions have changed in that the requisite findings for approval can no longer be made.
44. Prior to any occupancy permit being granted, or commencement of the approved use, these conditions shall be completed to the satisfaction of the City.

PASSED AND APPROVED THIS 24TH DAY OF FEBRUARY, 2020 BY THE FOLLOWING ROLL CALL VOTE:

AYES:
NOES:
ABSENT:
ABSTAIN:

Chairman

ATTEST:

APPROVE AS TO FORM:
OLIVAREZ MADRUGA
ASSISTANT CITY ATTORNEY

Salvador Lopez Jr., Deputy Secretary

By: _____
Robert McMurry

TRAFFIC IMPACT STUDY
7801-7835 OTIS AVENUE
CHARTER SCHOOL PROJECT
City of Cudahy, California
February 18, 2020

Prepared for:

KLARE 16, LLC
3601 E. 1st Street
Los Angeles, CA 90063

LLG Ref. 5-19-0474-1



Prepared by:

Handwritten signature of Amrita Shankar in black ink.

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Under the Supervision of:

Handwritten signature of David S. Shender in black ink.

David S. Shender, P.E.
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APPENDIX

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TRAFFIC IMPACT STUDY
7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT
City of Cudahy, California
February 18, 2020

1.0 INTRODUCTION

This traffic analysis has been conducted to identify and evaluate the potential traffic impacts of the proposed charter school project (the “Project”) located at 7801-7835 Otis Avenue in the City of Cudahy, California (the “Project Site”). The Project proposes the development of a charter school (Grades K-8) accommodating a maximum enrollment of 1,075 students. Two two-story buildings are proposed to be developed on the site. One building will be dedicated to Grades K-4 and will accommodate a maximum enrollment of 575 students. The other building will be dedicated to Grades 5-8 and will accommodate a maximum enrollment of 500 students. The Project Site is bounded by Olive Street to the north, Elizabeth Street to the south, Otis Avenue to the east, and industrial uses to the west. The Project Site location and general vicinity are shown in *Figure 1-1*.

As directed by the City of Cudahy (the “City”), the traffic analysis follows Los Angeles County Department of Public Works (LACDPW) traffic study guidelines¹ and is consistent with traffic impact assessment guidelines set forth in the Los Angeles County Congestion Management Program². This traffic analysis evaluates potential Project-related impacts at 20 key intersections in the vicinity of the Project Site. The study intersections were determined in consultation with City staff. As directed by the City, the Highway Capacity Manual 2010 (HCM) method was used to determine average control delays and corresponding Levels of Service (LOS) at the 20 study intersections located within or shared with the City of Cudahy, the City of Bell, the City of Huntington Park, and the City of South Gate. A review also was conducted of Los Angeles County Metropolitan Transportation Authority (Metro) freeway and intersection monitoring stations to determine if a Congestion Management Program transportation impact assessment analysis is required for the proposed Project. In addition, as directed by the City, an assessment is provided of the Project’s Vehicle Miles Traveled (VMT) transportation impact.

This study (i) presents existing traffic volumes, (ii) includes existing traffic volumes with the forecast net new traffic volumes from the proposed Project, (iii) recommends mitigation measures, where necessary, (iv) forecasts future cumulative baseline traffic volumes, (v) forecasts future traffic volumes with the proposed Project, (vi) determines future forecast with Project-related impacts, and (vii) recommends mitigation measures, where necessary. In addition, this study presents the VMT assessment based on Senate Bill 743.

¹ County of Los Angeles’ *Traffic Impact Analysis Report Guidelines*, January 1997.

² *2010 Congestion Management Program for Los Angeles County*, Los Angeles County Metropolitan Transportation Authority, 2010.



FIGURE 1-1
VICINITY MAP

MAP SOURCE: GOOGLE MAPS
 PROJECT SITE
 STUDY INTERSECTION

NOT TO SCALE

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 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

1.1 Study Area

Upon coordination with City staff, 20 study intersections have been identified for evaluation during the weekday morning and afternoon peak hours. The study intersections were evaluated from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM to determine the respective peak commuter hours. The 20 study intersections provide local access to the study area and define the extent of the boundaries for this traffic impact analysis. Further discussion of the existing street system and study area is provided in Section 4.0.

The general location of the Project in relation to the study locations and surrounding street system is presented in *Figure 1-1*. The traffic analysis study area is generally comprised of those locations which have the greatest potential to experience significant traffic impacts due to the proposed Project as defined by the Lead Agency. In the traffic engineering practice, the study area generally includes those intersections that are:

- a. Immediately adjacent or in close proximity to the Project Site;
- b. In the vicinity of the Project Site that are documented to have current or projected future adverse operational issues; and
- c. In the vicinity of the Project Site that are forecast to experience a relatively greater percentage of Project-related vehicular turning movements (e.g., at freeway ramp intersections).

The locations selected for analysis were based on the above criteria, the peak-hour vehicle trip generation associated with the proposed Project, the anticipated distribution of Project vehicular trips, and existing intersection/corridor operations.

2.0 PROJECT DESCRIPTION

2.1 Site Location

The proposed Project Site is located at 7801-7835 Otis Avenue in the City of Cudahy. The Project Site is bounded by Olive Street to the north, Elizabeth Street to the south, Otis Avenue to the east, and industrial uses to the west. The Project Site location and general vicinity are shown in *Figure 1-1*.

2.2 Existing Project Site

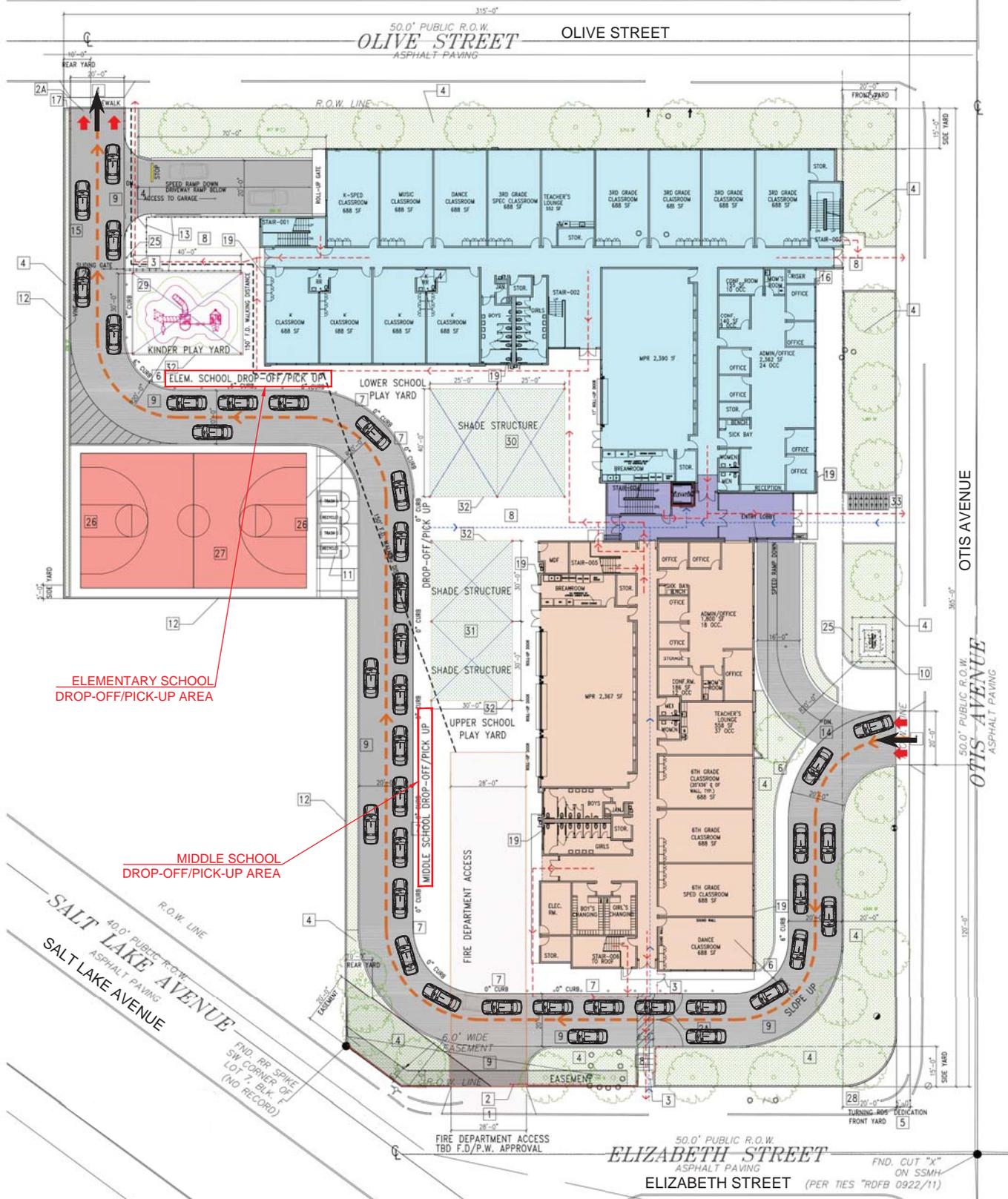
The Project Site is currently occupied by an auto repair shop with approximately 3,600 square feet of building floor area and an industrial site with approximately 30,265 square feet of building floor area. Vehicular access to the existing Project Site is provided via two driveways along the west side of Otis Avenue and one driveway along the south side of Olive Street. An additional driveway along the south side of Olive Street is currently fenced off.

2.3 Proposed Project Description

The Project applicant seeks to remove the existing buildings and construct a charter elementary school (Grades K-4) accommodating an enrollment of 575 students and a charter middle school (Grades 5-8) accommodating an enrollment of 500 students. An on-site subterranean parking garage providing 99 spaces is proposed as part of the Project to be used by staff and visitors. Construction and occupancy of the proposed Project is planned to be completed by the year 2021. The site plan for the proposed Project is illustrated in *Figure 2-1*.

Vehicular access to the Project's drop-off/pick-up area and subterranean parking garage will be provided via one inbound driveway along the west side of Otis Avenue at the easterly portion of the Project Site, as well as one outbound driveway along the south side of Olive Street, at the northwest portion of the Project Site. Further discussion on the Project Site access and circulation schemes is provided in Section 3.0.

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ELEMENTARY SCHOOL
DROP-OFF/PICK-UP AREA

MIDDLE SCHOOL
DROP-OFF/PICK-UP AREA



SOURCE: FRANCO ARCHITECTS INC.

FIGURE 2-1 PROJECT SITE PLAN

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7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

3.0 SITE ACCESS AND CIRCULATION

The proposed site access scheme for the Project is displayed in *Figure 2-1*. A description of the proposed site access and circulation scheme is provided in the following subsections.

3.1 Existing Vehicular Site Access

Vehicular access to the existing Project Site is provided via two driveways along the west side of Otis Avenue and one driveway along the south side of Olive Street.

3.2 Vehicular Project Site Access

Descriptions of the Project Site driveways are provided in the following paragraphs:

- *Otis Avenue Driveway:*

Vehicular ingress to the Project's drop-off/pick-up area and subterranean parking garage will be provided via one driveway along the west side of Otis Avenue approximately midway between Olive Street and Elizabeth Street. The ingress driveway is proposed to accommodate right-turn vehicular ingress only (i.e., right-turn egress and left-turn ingress and egress movements will not be permitted). Signage on Otis Avenue prohibiting northbound left-turn ingress movements during drop-off/pick-up periods will be provided. Additionally, staff and parents/caregivers will be provided with information regarding the site access scheme prior to the start of the school year. Therefore, motorists destined to the Project will be aware of the right-turn only ingress operation at the Otis Avenue driveway and will plan their travel routes in advance so as to arrive at the Project site via southbound Otis Avenue. Traffic destined to the Project to drop-off or pick-up students will enter the proposed Otis Avenue ingress driveway, travel within the site in the proposed drop-off/pick-up lane, complete the student drop-off or pick-up, and then exit onto Olive Street via the proposed driveway at the northwesterly portion of the Project Site. Traffic destined to the Project to access the subterranean parking garage will enter the Otis Avenue driveway and travel down the ramp to the parking garage. Traffic departing the Project from the parking garage will travel up the ramp at the northwesterly portion of the Project Site and exit via the proposed Olive Street egress driveway.

- *Olive Street Driveway:*

Vehicular egress from the Project's drop-off/pick-up area, as well as from the subterranean parking garage, will be provided via one driveway along the south side of Olive Street, at the northwest portion of the Project Site. The Olive Street driveway is proposed to accommodate vehicular egress movements only (i.e., left-turn and right-turn ingress movements are not permitted).

3.3 Proposed Student Drop-Off and Pick-Up Operations

The proposed student drop-off/pick-up area is shown in *Figure 2-1*. Vehicles destined to the Project to drop-off or pick-up students will enter the site via the proposed ingress driveway on Otis Avenue, travel within the site in the proposed drop-off/pick-up lane, complete the student drop-off or pick-up for Grades 5-8, continue northbound within the site in the proposed drop-off/pick-up lane, complete the student drop-off or pick-up for Grades K-4, and then exit via the northwesterly driveway onto Olive Street. The proposed drop-off/pick-up lane can accommodate approximately 26 vehicles queued within the site. As shown, the proposed on-site drop-off/pick-up area lane is approximately 20 feet in width, which is sufficient to accommodate one lane of queued vehicles, plus a bypass lane to allow vehicles to bypass the queue should there be delay related to the passenger loading/unloading of one or more of the queued vehicles.

3.3.1 Estimated Peak Vehicle Queue

Private vehicles are the main component that contributes to the vehicle queuing analysis during the peak student drop-off and pick-up periods. The analysis focuses on the morning student drop-off period as the pick-up of students tends to be dispersed on a relative basis throughout the afternoon, particularly as students are involved with after-school activities.

The proposed Project is forecast to generate 365 inbound trips and 310 outbound trips during the AM peak hour (refer to Section 7.0, Traffic Forecasting Methodology, for a discussion of the Project's trip generation forecasts). While the ITE trip rates do not distinguish between trips related to staff arrivals and student drop-offs in the morning, it can be generally assumed that the 310 outbound trips during the AM peak hour would correlate with at least 310 inbound trips during this period related to student drop-off operations. The remaining inbound vehicle trips during the AM peak hour are likely due to administrative staff, visitors, etc., at the campus. Therefore, for this queuing analysis, it has been assumed that approximately 310 vehicles would utilize the on-site vehicle queue area as part of the student drop-off operations.

While the ITE forecasts are made for a peak one-hour (i.e., 60-minute) period, it has been observed that student drop-offs are typically concentrated in shorter timeframes leading up to the start of classes for the day. Thus, for this analysis it has been conservatively (i.e., worst case) assumed that the 310 vehicles would arrive in a 30-minute period, which is equivalent to approximately 10.3 vehicles per minute. Multiplying this average arrival by two to approximate the 95th percentile confidence level of a Poisson distribution (which is typically used by traffic engineers in planning the lengths of left and right-turn pockets at intersections) results in an estimated maximum of 21 vehicles during the peak minute. As previously noted, the on-site vehicle queue area can accommodate a maximum of 26 queued vehicles within the site. Accordingly, Project-related trips are not expected to queue onto Otis Avenue. Therefore, it is concluded that the planned on-site vehicle queue area can adequately accommodate the forecast peak demand of 21 queued vehicles during the morning student drop-off operation. It is noted that vehicles are expected to depart the Project Site at a similar peak rate (21 exiting vehicles during the peak one-minute period).

4.0 EXISTING STREET SYSTEM

4.1 Regional Highway System

Regional access to the Project Site is provided by the I-105 (Glenn Anderson) Freeway and I-710 (Long Beach) Freeway. Brief descriptions of the I-105 and I-710 Freeways are provided in the following paragraphs.

I-105 (Glenn Anderson) Freeway is an east-west freeway connecting the City of Norwalk to the City of El Segundo. In the Project vicinity, three-mixed flow lanes are generally provided in each direction on the I-105 Freeway with auxiliary merge/weave lanes provided between some interchanges as well as one carpool lane in each direction. Eastbound and westbound ramps are provided on the I-105 Freeway at Long Beach Boulevard in the Project vicinity, which are located approximately 2.8 miles south of the Project Site.

I-710 (Long Beach) Freeway is a north-south oriented freeway connecting the City of Long Beach with the City of Los Angeles. In the Project vicinity, four mixed flow lanes are generally provided in each direction on the I-710 Freeway with auxiliary merge/weave lanes provided between some interchanges. Northbound and southbound ramps are provided on the I-710 Freeway at Florence Avenue in the Project vicinity, which are located approximately 1.5 miles north of the Project Site.

4.2 Local Roadway System

Immediate access to the Project Site is provided via Otis Avenue and Olive Street. The following study intersections were selected in consultation with City staff for analysis of potential impacts due to the proposed Project:

1. Salt Lake Avenue – California Avenue / Florence Avenue (City of Huntington Park)
2. California Avenue / Hope Street (City of Huntington Park)
3. California Avenue / Santa Ana Street (City of Huntington Park / City of South Gate)
4. California Avenue / Independence Avenue (City of South Gate)
5. California Avenue / Ardmore Avenue (City of South Gate)
6. California Avenue – Salt Lake Avenue / Florence Avenue (City of Bell / City of Huntington Park)
7. Otis Avenue / Florence Avenue (City of Bell)
8. Otis Avenue / Live Oak Street (City of Cudahy)
9. Otis Avenue / Clara Street (City of Cudahy)

10. Otis Avenue – Otis Street / Santa Ana Street (City of Huntington Park / City of South Gate)
11. Otis Street / Independence Avenue (City of South Gate)
12. Otis Street / Ardmore Avenue (City of South Gate)
13. Atlantic Avenue / Florence Avenue (City of Bell / City of Cudahy)
14. Atlantic Avenue / Live Oak Street (City of Cudahy)
15. Atlantic Avenue / Clara Street (City of Cudahy)
16. Atlantic Avenue / Elizabeth Street (City of Cudahy)
17. Atlantic Avenue / Santa Ana Street (City of Cudahy)
18. Atlantic Avenue / N. Cecilia Street (City of Cudahy)
19. Atlantic Avenue / S. Cecilia Street (City of Cudahy)
20. Otis Avenue / Elizabeth Street (City of Cudahy)

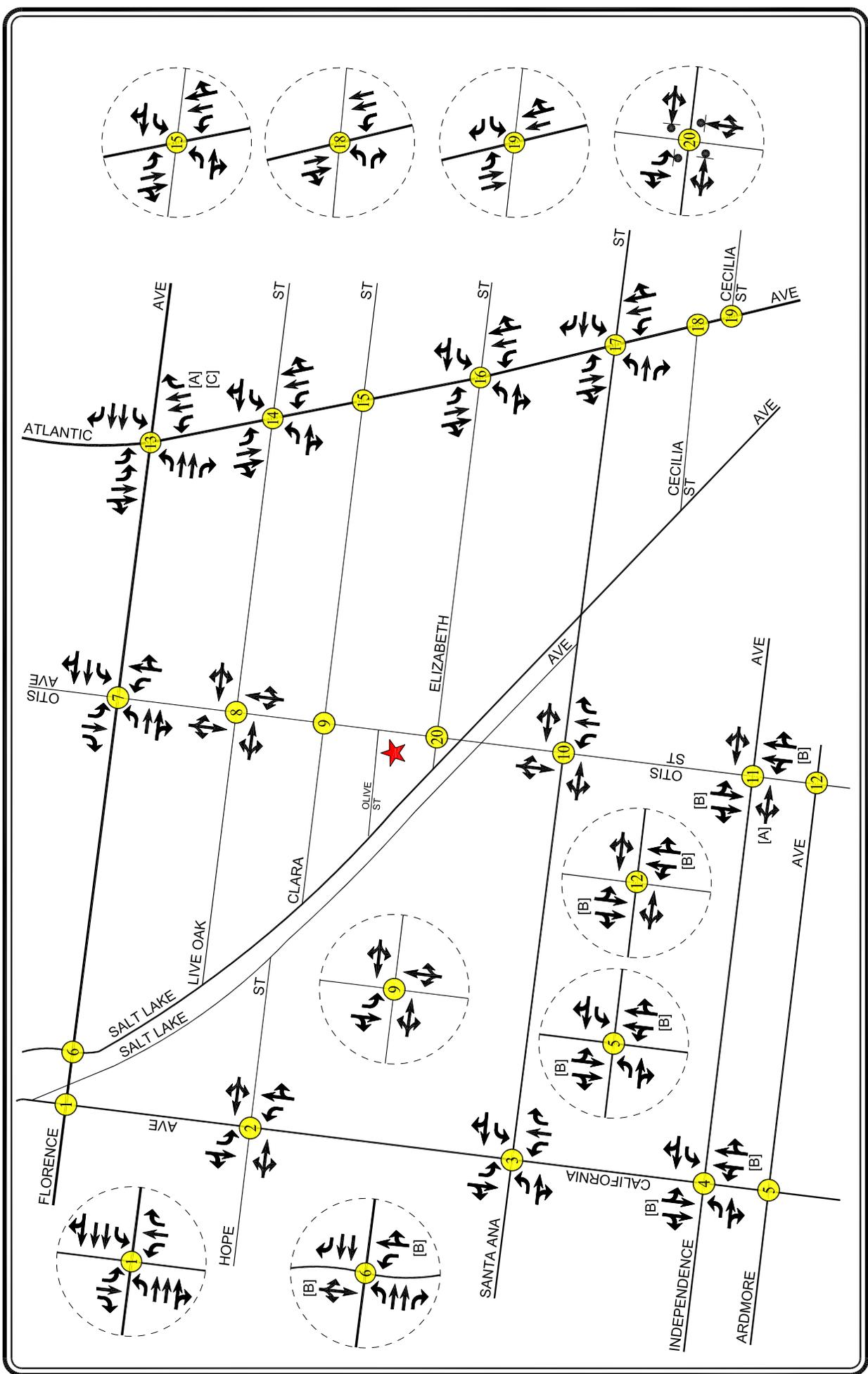
Nineteen of the 20 study intersections selected for analysis are presently controlled by traffic signals. The Otis Avenue / Elizabeth Street intersection is currently under the control of stop signs. The existing lane configurations at the study intersections are displayed in *Figure 4-1*.

4.3 Roadway Descriptions

A brief description of the roadways in the Project vicinity is provided in the following paragraphs.

California Avenue is a north-south oriented roadway located west of the Project Site. Within the Project study area, California Avenue is designated as a Collector Roadway by the City of Bell, as a Local Street by the City of Huntington Park, and as a Secondary Arterial by the City of South Gate. North of Santa Ana Street, one through travel lane is provided in each direction on California Avenue within the Project study area. South of Santa Ana Street, two through travel lanes are provided in each direction on California Avenue. Separate exclusive left-turn lanes are provided in each direction on California Avenue at the Florence Avenue, Hope Street, and Santa Ana Street intersections. North of Florence Avenue, California Avenue becomes Salt Lake Avenue. California Avenue is posted for a speed limit of 35 miles per hour within the Project study area.

Salt Lake Avenue is a north-south oriented roadway located west of the Project Site. Within the Project study area, Salt Lake Avenue is designated as a Collector Roadway by the City of Bell, as a Collector Street by the City of Cudahy, and as a Collector Roadway by the City of Huntington Park. One through travel lane is provided in each direction on Salt Lake Avenue



NOT TO SCALE

- ★ PROJECT SITE
- STUDY INTERSECTION
- STOP SIGN
- [A] NO RIGHT-TURN ON RED
- [B] SPLIT PHASING
- [C] RIGHT-TURN OVERLAP

FIGURE 4-1
EXISTING LANE CONFIGURATIONS

7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Salt Lake Avenue at major intersections. North of Florence Avenue, Salt Lake Avenue becomes California Avenue. North of Florence Avenue, Salt Lake Avenue is posted for a speed limit of 25 miles per hour within the Project study area. South of Florence Avenue, Salt Lake Avenue is posted for a speed limit of 35 miles per hour within the Project study area.

Otis Avenue is a north-south oriented roadway that borders the Project Site to the east. Within the Project study area, Otis Avenue is designated as a Collector Roadway by the City of Bell, as a Collector Street by the City of Cudahy, and as a Local Street by the City of Huntington Park. One through travel lane is provided in each direction on Otis Avenue within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Otis Avenue at the Florence Avenue intersection, and separate exclusive left-turn lanes are provided in the southbound direction on Otis Avenue at the Clara Street and Elizabeth Street intersections. South of Santa Ana Street, Otis Avenue becomes Otis Street. North of Florence Avenue, Otis Avenue is posted for a speed limit of 30 miles per hour within the Project study area. South of Florence Avenue, Otis Avenue is posted for a speed limit of 25 miles per hour within the Project study area.

Otis Street is a north-south oriented roadway located east of the Project Site. Within the Project study area, Otis Street is designated as a Collector Street by the City of South Gate. Two through travel lanes are provided in each direction on Otis Street within the Project study area. North of Santa Ana Street, Otis Street becomes Otis Avenue. Otis Street is posted for a speed limit of 30 miles per hour within the Project study area.

Atlantic Avenue is a north-south oriented roadway located east of the Project Site. Within the Project study area, Atlantic Avenue is designated as an Arterial Roadway by the City of Bell, as a Major Highway by the City of Cudahy, and as a Primary Arterial by the City of South Gate. Two through travel lanes are provided in each direction on Atlantic Avenue within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Atlantic Avenue at major intersections. Atlantic Avenue is posted for a speed limit of 35 miles per hour within the Project study area.

Florence Avenue is an east-west oriented roadway located north of the Project Site. Within the Project study area, Florence Avenue is designated as an Arterial Roadway by the City of Bell and as a Major Arterial by the City of Huntington Park. Two through travel lanes are provided in each direction on Florence Avenue within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Florence Avenue at major intersections. Florence Avenue is posted for a speed limit of 35 miles per hour within the Project study area.

Live Oak Street is an east-west oriented roadway located north of the Project Site. Within the Project study area, Live Oak Street is designated as a Local Street by the City of Cudahy and as a Local Street by the City of Huntington Park. One through travel lane is provided in each direction on Live Oak Street within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Live Oak Street at the Atlantic Avenue intersection. Live Oak Street is posted for a speed limit of 25 miles per hour within the Project study area.

Hope Street is an east-west oriented roadway located north of the Project Site. Within the Project study area, Hope Street is designated as a Local Street by the City of Huntington Park. One through travel lane is provided in each direction on Hope Street within the Project study area. Hope Street is posted for a speed limit of 25 miles per hour within the Project study area.

Clara Street is an east-west oriented roadway located north of the Project Site. Within the Project study area, Clara Street is designated as a Collector Street by the City of Cudahy. One through travel lane is provided in each direction on Clara Street within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Clara Street at the Atlantic Avenue intersection. West of Atlantic Avenue, Clara Street is posted for a speed limit of 30 miles per hour within the Project study area. East of Atlantic Avenue, Clara Street is posted for a speed limit of 25 miles per hour within the Project study area.

Olive Street is an east-west oriented roadway that borders the Project Site to the north. Within the Project study area, Olive Street is designated as a Local Street by the City of Cudahy and as a Local Street by the City of Huntington Park. One through travel lane is provided in each direction on Olive Street within the Project study area. Olive Street is posted for a speed limit of 25 miles per hour within the Project study area.

Elizabeth Street is an east-west oriented roadway located south of the Project Site. Within the Project study area, Elizabeth Street is designated as a Collector Street by the City of Cudahy. One through travel lane is provided in each direction on Elizabeth Street within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Elizabeth Street at the Atlantic Avenue intersection. Elizabeth Street is posted for a speed limit of 25 miles per hour within the Project study area.

Santa Ana Street is an east-west oriented roadway located south of the Project Site. Within the Project study area, Santa Ana Street is designated as a Collector Street by the City of Cudahy and as a Collector Street by the City of South Gate. One through travel lane is provided in each direction on Santa Ana Street within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Santa Ana Street at the California Avenue and Atlantic Avenue intersections. West of Atlantic Avenue, Santa Ana Street is posted for a speed limit of 30 miles per hour within the Project study area. East of Atlantic Avenue, Santa Ana Street is posted for a speed limit of 25 miles per hour within the Project study area.

Cecilia Street is an east-west oriented roadway located south of the Project Site. Within the Project study area, Cecilia Street is designated as a Local Street by the City of Cudahy. One through travel lane is provided in each direction on Cecilia Street within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Cecilia Street at the Atlantic Avenue intersection. Cecilia Street is posted for a speed limit of 25 miles per hour within the Project study area.

Independence Avenue is an east-west oriented roadway located south of the Project Site. Within the Project study area, Independence Avenue is designated as a Collector Street by the City of South Gate. One through travel lane is provided in each direction on Independence Avenue

within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Independence Avenue at the California Avenue intersection. West of Otis Street, Independence Avenue is posted for a speed limit of 35 miles per hour within the Project study area. There is no speed limit posted on Independence Avenue east of Otis Street within the Project study area, thus a prima facie speed limit of 25 miles per hour is assumed, consistent with the State of California Vehicle Code.

Ardmore Avenue is an east-west oriented roadway located south of the Project Site. Within the Project study area, Ardmore Avenue is designated as a Collector Street by the City of South Gate. One through travel lane is provided in each direction on Ardmore Avenue within the Project study area. Separate exclusive left-turn lanes are provided in each direction on Ardmore Avenue at the California Avenue intersection. Ardmore Avenue terminates at the Otis Street intersection. West of Otis Street, Ardmore Avenue is posted for a speed limit of 35 miles per hour within the Project study area.

4.4 Public Transit Services

Public transit service within the Project study area is currently provided by the Los Angeles County Metropolitan Transit Authority (Metro), the City of Cudahy Transit (Cudahy Area Rapid Transit), the City of Bell Transit (La Campana), and the City of Huntington Park Transit (Huntington Park Express). A summary of the existing transit service, including the transit route, destinations and peak hour headways is presented in *Table 4-1*. The existing public transit routes in the Project site vicinity are illustrated in *Figure 4-2*.

It is noted that the Union Pacific Railroad tracks run through the Project study area. However, upon visiting the Project study area, it was observed that train operations were infrequent.

Table 4-1
EXISTING PUBLIC TRANSIT ROUTES [1]

10-Dec-19

ROUTE	DESTINATIONS	ROADWAY(S) NEAR SITE	NO. OF BUSES/TRAINS DURING PEAK HOUR		
			DIR	AM	PM
Metro 111	Norwalk Station to LAX City Bus Center (via Florence Avenue)	Florence Avenue	EB WB	5 5	6 5
Metro 260	Alhambra to Artesia Station (via Fair Oaks Avenue and Atlantic Avenue)	Atlantic Avenue	NB SB	5 4	3 5
Metro 611	Cudahy to Bell (via Santa Ana Street, Leonis Boulevard and Wilcox Avenue)	Santa Ana Street	CW CCW	1 1	1 2
Metro 612	Roundtrip from Willowbrook/Rosa Parks Station (via Wilmington Avenue, Florence Avenue, Otis Street and Imperial Highway)	Florence Avenue, Otis Street	CW CCW	1 1	1 1
Metro Rapid 762	Pasadena to Artesia Station (via Fair Oaks Avenue and Atlantic Avenue)	Atlantic Avenue	NB SB	2 3	2 2
Cudahy Area Rapid Transit	Roundtrip from Cudahy City Hall (via Santa Ana Street, Atlantic Avenue, Live Oak Street, and Otis Avenue)	Atlantic Avenue, Otis Avenue	CW CCW	0 2	0 1
La Campana	Roundtrip from Bell Civic Center (via Gage Avenue, Walker Avenue, Florence Avenue and California Avenue)	Atlantic Avenue, Florence Avenue	CW CCW	2 0	2 0

Table 4-1 (Continued)
EXISTING PUBLIC TRANSIT ROUTES [1]

ROUTE	DESTINATIONS	ROADWAY(S) NEAR SITE	NO. OF BUSES/TRAINS DURING PEAK HOUR		
			DIR	AM	PM
Huntington Park Express	Roundtrip from Huntington Park City Hall (via Saturn Avenue, Santa Fe Avenue, Slauson Avenue, and California Avenue)	California Avenue	CW CCW	3 0	2 0
Total			35	33	

[1] Sources: Los Angeles County Metropolitan Transportation Authority (Metro) website, 2019.
 City of Cudahy Transit website, 2019.
 City of Bell (La Campana) Transit website, 2019.
 City of Huntington Park Transit website, 2019.
 CW = Clockwise
 CCW = Counterclockwise

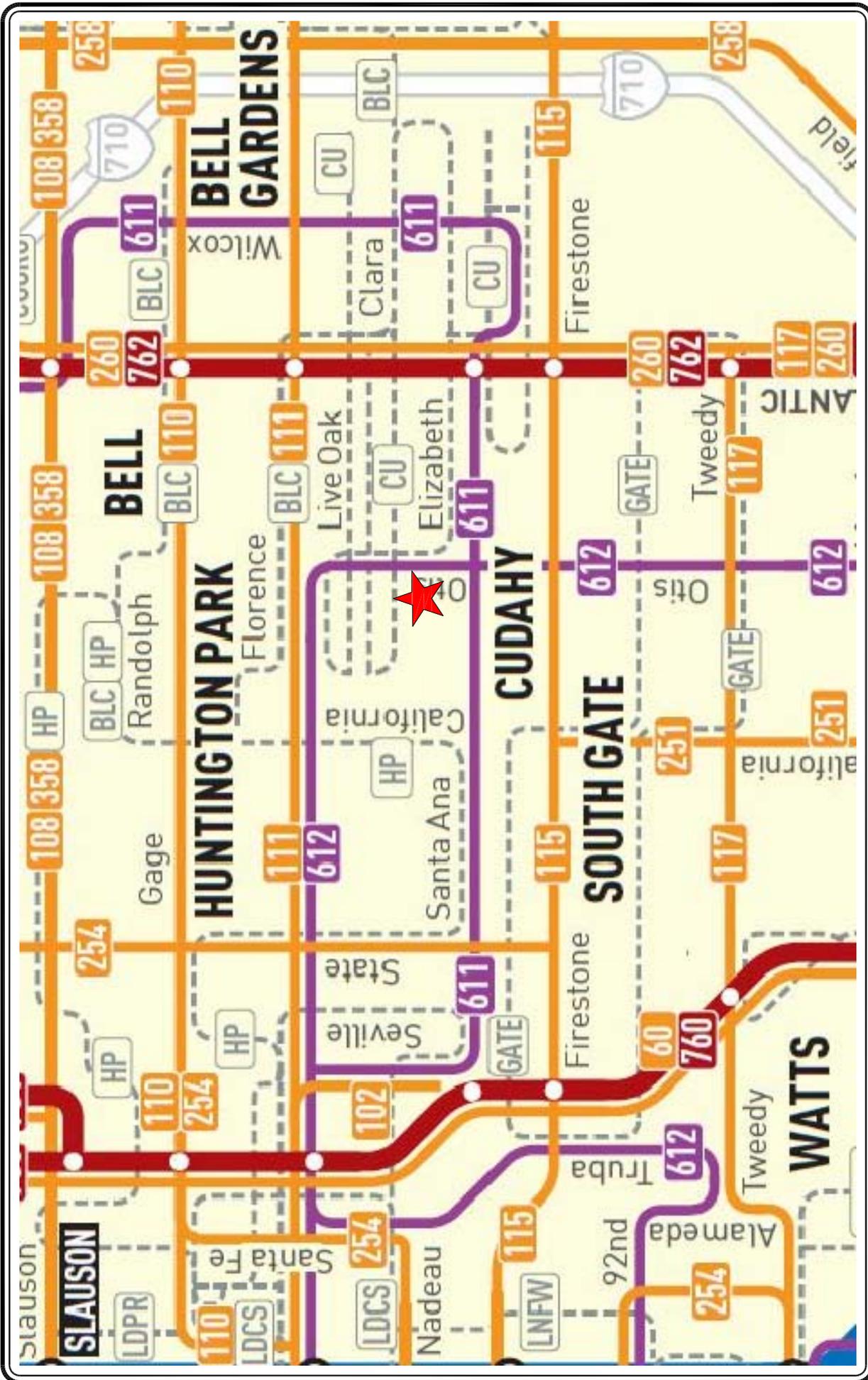


FIGURE 4-2
EXISTING PUBLIC TRANSIT ROUTES

MAP SOURCE: METROPOLITAN TRANSPORTATION AUTHORITY

★ PROJECT SITE



NOT TO SCALE

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7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

5.0 TRAFFIC COUNTS

Manual traffic counts of vehicular turning movements were conducted on Wednesday, October 16, 2019 at 19 of the 20 study intersections during the weekday morning and afternoon commuter periods to determine the peak hour traffic volumes. The manual traffic counts of vehicular turning movements for the Otis Avenue / Elizabeth Street intersection were conducted on Thursday, November 7, 2019. The manual traffic counts at the 20 study intersections were conducted from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM to determine the respective peak commuter hours.

The weekday AM and PM peak period manual counts of vehicle movements at the study intersections are summarized in *Table 5-1*. The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are shown in *Figures 5-1* and *5-2*, respectively. Summary data worksheets of the manual traffic counts at the study intersections are contained in *Appendix A*.

Table 5-1
EXISTING TRAFFIC VOLUMES [1]

NO.	INTERSECTION	DATE	DIR	AM PEAK HOUR		PM PEAK HOUR	
				BEGAN	VOLUME	BEGAN	VOLUME
1	Salt Lake Avenue-California Avenue / Florence Avenue	10/16/2019	NB	7:15	910	5:00	607
			SB		402		602
			EB		1,067		1,263
			WB		1,391		1,085
2	California Avenue / Hope Street	10/16/2019	NB	7:00	682	5:00	494
			SB		463		639
			EB		114		64
			WB		86		42
3	California Avenue / Santa Ana Street	10/16/2019	NB	7:00	701	5:00	612
			SB		521		640
			EB		475		585
			WB		462		430
4	California Avenue / Independence Avenue	10/16/2019	NB	7:00	729	5:00	595
			SB		594		593
			EB		249		201
			WB		263		181
5	California Avenue / Ardmore Avenue	10/16/2019	NB	7:15	710	5:00	607
			SB		647		635
			EB		410		326
			WB		223		133
6	California Avenue - Salt Lake Avenue / Florence Avenue	10/16/2019	NB	7:00	533	4:45	310
			SB		219		288
			EB		1,294		1,409
			WB		1,116		852
7	Otis Avenue / Florence Avenue	10/16/2019	NB	7:00	516	5:00	355
			SB		346		392
			EB		1,221		1,108
			WB		1,189		953
8	Otis Avenue / Live Oak Street	10/16/2019	NB	7:00	471	5:00	357
			SB		393		397
			EB		116		88
			WB		173		124
9	Otis Avenue / Clara Street	10/16/2019	NB	7:00	382	5:00	379
			SB		307		374
			EB		138		132
			WB		335		264
10	Otis Avenue - Otis Street / Santa Ana Street	10/16/2019	NB	7:00	478	4:00	437
			SB		342		457
			EB		518		517
			WB		338		448
11	Otis Street / Independence Avenue	10/16/2019	NB	7:15	704	4:45	644
			SB		516		552
			EB		245		137
			WB		70		126
12	Otis Street / Ardmore Avenue	10/16/2019	NB	7:00	693	4:30	637
			SB		584		622
			EB		371		328
			WB		6		7

Table 5-1 (Continued)
EXISTING TRAFFIC VOLUMES [1]

NO.	INTERSECTION	DATE	DIR	AM PEAK HOUR		PM PEAK HOUR	
				BEGAN	VOLUME	BEGAN	VOLUME
13	Atlantic Avenue / Florence Avenue	10/16/2019	NB	7:15	1,071	4:00	826
			SB		840		960
			EB		1,201		1,086
			WB		1,211		1,039
14	Atlantic Avenue / Live Oak Street	10/16/2019	NB	7:15	1,116	5:00	809
			SB		904		991
			EB		294		210
			WB		283		282
15	Atlantic Avenue / Clara Street	10/16/2019	NB	7:15	1,127	5:00	897
			SB		1,001		1,067
			EB		310		329
			WB		420		394
16	Atlantic Avenue / Elizabeth Street	10/16/2019	NB	7:15	992	5:00	825
			SB		953		1,037
			EB		309		276
			WB		305		228
17	Atlantic Avenue / Santa Ana Street	10/16/2019	NB	7:15	823	4:30	814
			SB		888		950
			EB		450		414
			WB		372		303
18	Atlantic Avenue / N. Cecilia Street	10/16/2019	NB	7:30	845	5:00	809
			SB		859		872
			EB		100		58
			WB		0		2
19	Atlantic Avenue / S. Cecilia Street	10/16/2019	NB	7:15	830	4:45	794
			SB		848		877
			EB		0		0
			WB		158		120
20	Otis Avenue / Elizabeth Street	11/07/2019	NB	7:15	367	4:00	394
			SB		330		375
			EB		52		66
			WB		209		190

[1] National Data & Surveying Services

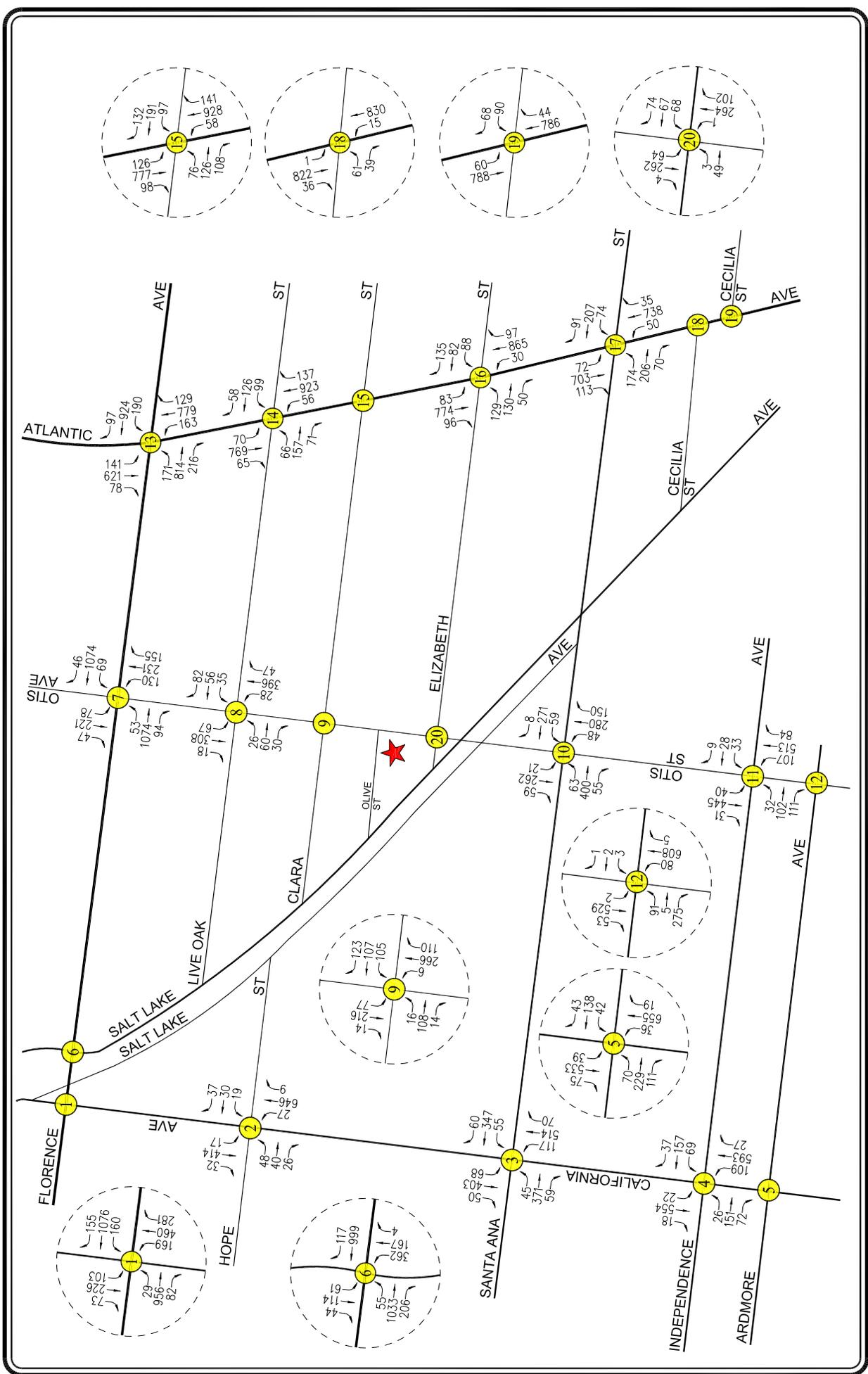
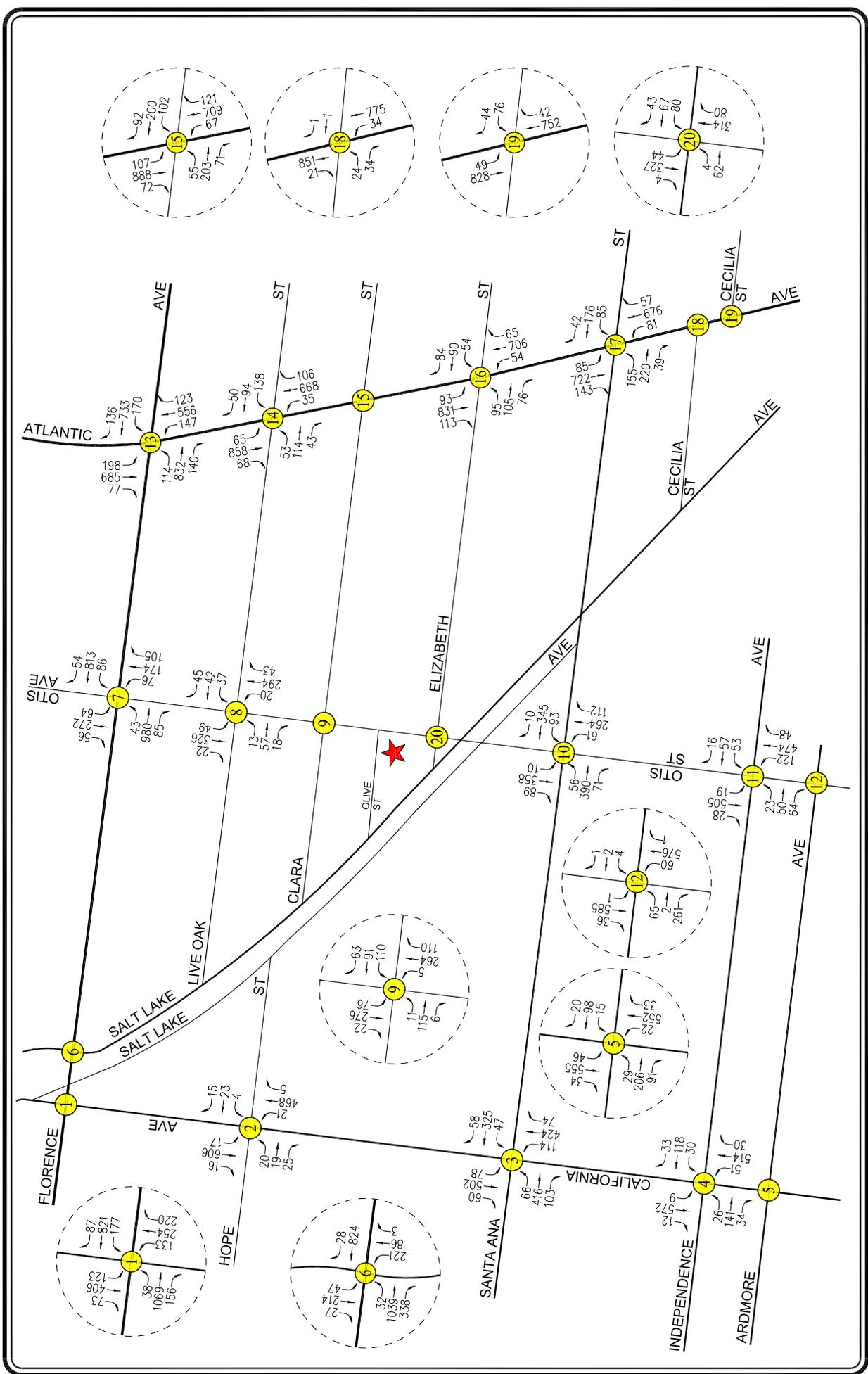


FIGURE 5-1
EXISTING TRAFFIC VOLUMES
 WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

 **NOT TO SCALE**
 PROJECT SITE
 STUDY INTERSECTION



NOT TO SCALE

- ★ PROJECT SITE
- ⊗ STUDY INTERSECTION

FIGURE 5-2
EXISTING TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR
7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

6.0 CUMULATIVE DEVELOPMENT PROJECTS

The forecast of future pre-Project conditions was prepared in accordance to procedures outlined in Section 15130 of the CEQA Guidelines. Specifically, the CEQA Guidelines provide two options for developing the future traffic volume forecast:

“(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or

(B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency.”

Accordingly, the traffic analysis provides a highly conservative estimate of future pre-Project traffic volumes as it incorporates both the “A” and “B” options outlined in CEQA Guidelines for purposes of developing the forecast.

6.1 Related Projects

A forecast of on-street traffic conditions prior to occupancy of the proposed Project was prepared by incorporating the potential trips associated with other known development projects (related projects) in the area. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development. The related projects research was based on information on file at the City of Cudahy Community Development Department, the City of Bell Community Development Department, the City of Huntington Park Community Development Department, the City of South Gate Community Development Department, and the County of Los Angeles Department of Regional Planning. The list of related projects in the Project site area is presented in *Table 6-1*. The location of the related projects is shown in *Figure 6-1*.

Traffic volumes expected to be generated by the related projects were calculated using rates provided in the Institute of Transportation Engineers’ (ITE) *Trip Generation Manual*³. The related projects’ respective traffic generation for the weekday AM and PM peak hours, as well as on a daily basis for a typical weekday, is summarized in *Table 6-1*. The distribution of the related projects traffic volumes to the study intersections during the weekday AM and PM peak hours are displayed in *Figures 6-2* and *6-3*, respectively.

³ Institute of Transportation Engineers *Trip Generation Manual*, 10th Edition, Washington, D.C., 2017.

Table 6-1
RELATED PROJECTS LIST AND TRIP GENERATION [1]

MAP NO.	PROJECT NAME/ PROJECT NUMBER	PROJECT STATUS	ADDRESS/ LOCATION	LAND USE DATA		PROJECT DATA SOURCE	DAILY TRIP ENDS [2]	AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
				LAND-USE	SIZE			IN	OUT	TOTAL	IN	OUT	TOTAL
City of Cudahy													
CU1	4855 Cecilia Street Manufacturing Project	Proposed	4855 Cecilia Street	Manufacturing	3,200 GSF	[3]	13	2	0	2	1	1	2
CU2	5252 Live Oak Street Residential Project	Approved	5252 Live Oak Street	Condominiums Single-Family Homes	19 DU (4) DU	[4] [5]	139 (38)	2 (1)	7 (2)	9 (3)	7 (3)	4 (1)	11 (4)
CU3	5111 Elizabeth Street Residential Project	Approved	5111 Elizabeth Street	Condominiums Single-Family Home	6 DU (1) DU	[4] [5]	44 (9)	1 (0)	2 (1)	3 (1)	2 (1)	1 (0)	3 (1)
CU4	7700 Atlantic Avenue Project	Proposed	7700 Atlantic Avenue	Car Wash	2,080 GSF	[6]	100	2	2	4	4	4	8
CU5	4935-4937 Santa Ana Street Residential Project	Proposed	4935-4937 Santa Ana Street	Apartments Single-Family Homes	6 DU (3) DU	[4] [5]	44 (28)	1 (1)	2 (1)	3 (2)	2 (2)	1 (1)	3 (3)
CU6	4302-4312 Elizabeth Street Residential Project	Proposed	4302-4312 Elizabeth Street	Apartments Single-Family Homes	48 DU (12) DU	[4] [5]	351 (113)	5 (2)	17 (7)	22 (9)	17 (8)	10 (4)	27 (12)
CU7	4254 Elizabeth Street Residential Project	Proposed	4254 Elizabeth Street	Condominiums Single-Family Homes	6 DU (2) DU	[4] [5]	44 (19)	1 (0)	2 (1)	3 (1)	2 (1)	1 (1)	3 (2)
CU8	5017 Clara Street Residential Project	Proposed	5017 Clara Street	Apartments Single-Family Home	8 DU (1) DU	[4] [5]	59 (9)	1 (0)	3 (1)	4 (1)	3 (1)	1 (0)	4 (1)
CU9	5037 Live Oak Street Residential Project	Proposed	5037 Live Oak Street	Apartments Single-Family Homes	20 DU (2) DU	[4] [5]	146 (19)	2 (0)	7 (1)	9 (1)	7 (1)	4 (1)	11 (2)
City of Bell													
B1	6619 King Avenue Residential Project	Proposed	6619 King Avenue	Apartments	7 DU	[4]	51	1	2	3	3	1	4
B2	Aldi Supermarket and Commercial Center	Proposed	6400 Atlantic Avenue	Supermarket Retail	18,557 GSF 7,577 GSF	[7]	999	38	26	64	54	52	106
B3	4704 Florence Avenue Residential Project	Approved	4704 Florence Avenue	Apartments	14 DU	[4]	102	1	5	6	5	3	8
B4	4410 Gage Avenue Café	Proposed	4410 Gage Avenue	Café	2,938 GSF	[8]	331	16	13	29	18	11	29
B5	6913 Vinevale Avenue Residential Project	Proposed	6913 Vinevale Avenue	Apartments Single-Family Home	5 DU (1) DU	[4] [5]	37 (9)	0 (0)	2 (1)	2 (1)	2 (1)	1 (0)	3 (1)
B6	4148 Florence Avenue Mixed-Use Project	Under Construction	4148 Florence Avenue	Fast-Food Restaurant Retail Restaurant	2,485 GSF 1,883 GSF (5,284) GSF	[9] [10] [8]	1,170 71 (596)	51 1 (29)	49 1 (24)	100 2 (53)	42 3 (32)	39 4 (20)	81 7 (52)

Table 6-1 (Continued)
RELATED PROJECTS LIST AND TRIP GENERATION [1]

12-Dec-19

MAP NO.	PROJECT NAME/ PROJECT NUMBER	PROJECT STATUS	ADDRESS/ LOCATION	LAND USE DATA		PROJECT DATA SOURCE	DAILY TRIP ENDS [2]			AM PEAK HOUR VOLUMES [2]			PM PEAK HOUR VOLUMES [2]		
				LAND-USE	SIZE		TRIP ENDS [2]	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT
B7	3613 Gage Avenue Mixed-Use Project	Proposed	3613 Gage Avenue	Retail Office	1,872 GSF 1,200 GSF	[10] [11]	71 12	1 1	1 0	2 1	3 0	4 1	7 1		
B8	4737 Gage Avenue Retail Project	Proposed	4737 Gage Avenue	Retail	2,350 GSF	[10]	89	1	1	2	4	5	9		
City of Huntington Park															
HP1	6241 Maywood Avenue Storage Facility Project	Proposed	6241 Maywood Avenue	Self-Storage Facility	157,696 GSF	[12]	238	10	6	16	13	14	27		
City of South Gate															
SG1	3125 Firestone Boulevard Commercial Project	Proposed	3125 Firestone Boulevard	Commercial	23,353 GSF	[10]	882	14	8	22	43	46	89		
County of Los Angeles															
LC1	R2015-01262	Proposed	2814 Live Oak Street	Single-Family Home Single-Family Home	1 DU (1) DU	[5] [5]	9 (9)	0 0	1 (1)	1 (1)	1 (1)	0 0	1 (1)		
TOTAL							4,153	119	117	236	185	180	365		

[1] Source: City of Cudahy Community Development Department, City of Bell Community Development Department, City of Huntington Park Community Development Department, City of South Gate Community Development Department, and Los Angeles County Department of Regional Planning related projects lists. Trip generation for the related projects are based on the ITE "Trip Generation Manual", 10th Edition, 2017 (as referenced in the Project Data Source column), unless otherwise noted.

[2] Trips are one-way traffic movements, entering or leaving.

[3] ITE Land Use Code 140 (Manufacturing) trip generation average rates.

[4] ITE Land Use Code 220 (Multifamily Housing [Low-Rise]) trip generation average rates.

[5] ITE Land Use Code 210 (Single-Family Detached Housing) trip generation average rates.

[6] Source: SANDAG "(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", 2002. SANDAG Land Use (Self-Serve Car Wash) trip generation estimated rates.

[7] Source: Traffic Impact Study Aldi Market at Atlantic Avenue and Gage Avenue Bell, California, prepared by KOA Corporation, March 2016.

[8] ITE Land Use Code 932 High-Turnover [Sit-Down] Restaurant trip generation average rates.

[9] ITE Land Use Code 934 (Fast-Food Restaurant with Drive-Through Window) trip generation average rates.

[10] ITE Land Use Code 820 (Shopping Center) trip generation average rates.

[11] ITE Land Use Code 710 (General Office Building) trip generation average rates.

[12] ITE Land Use Code 151 (Mini-Warehouse) trip generation average rates.

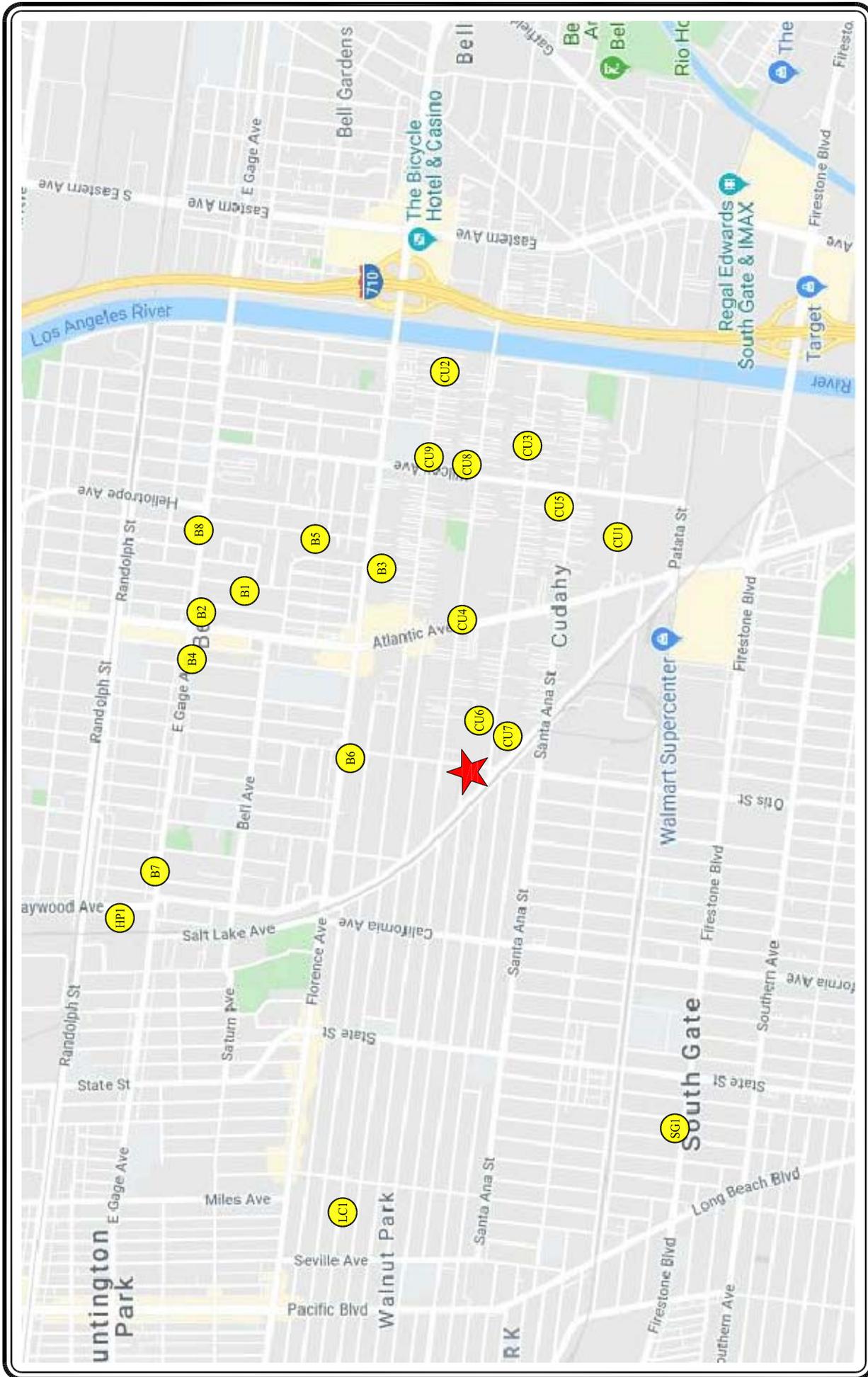


FIGURE 6-1
LOCATION OF RELATED PROJECTS

MAP SOURCE: GOOGLE MAPS
 ★ PROJECT SITE
 ● RELATED PROJECT

NOT TO SCALE

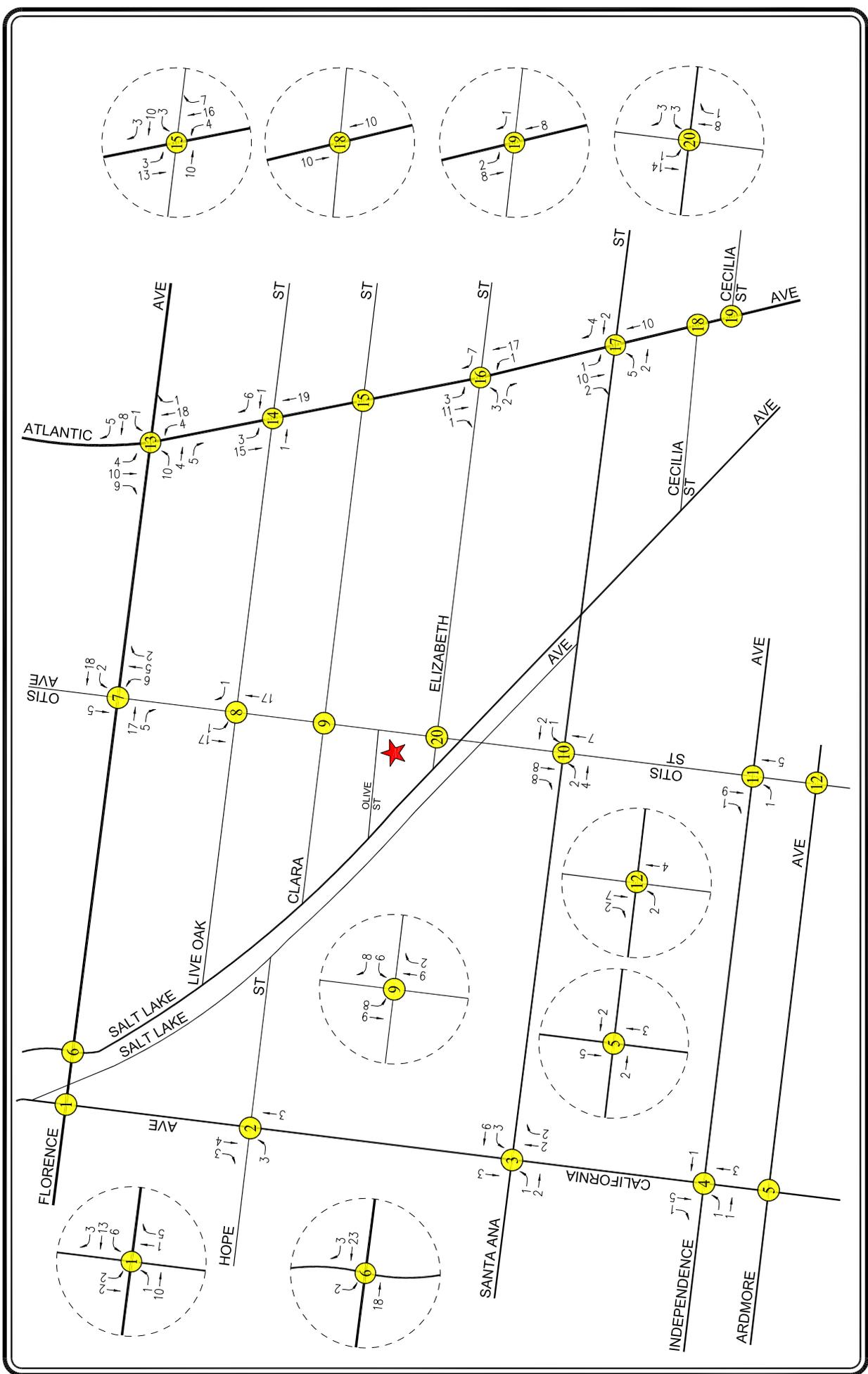


FIGURE 6-2
RELATED PROJECTS TRAFFIC VOLUMES
 WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

 **NOT TO SCALE**
 PROJECT SITE
 STUDY INTERSECTION

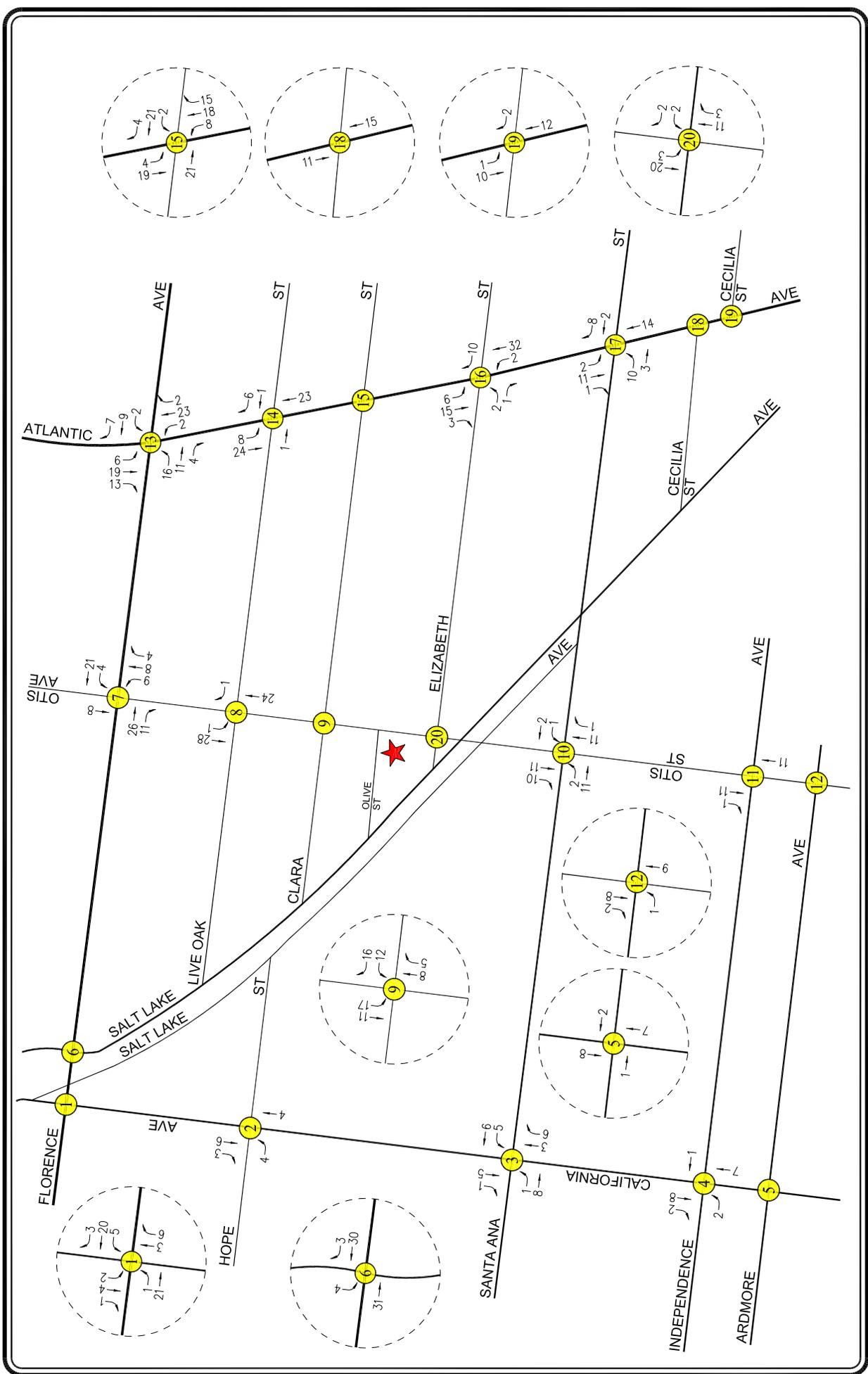


FIGURE 6-3
RELATED PROJECTS TRAFFIC VOLUMES
 WEEKDAY PM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

 **NOT TO SCALE**
 PROJECT SITE
 STUDY INTERSECTION

6.2 Ambient Traffic Growth Factor

In order to account for unknown related projects not included in this analysis, the existing traffic volumes were increased at an annual rate of 1.0 percent (1.0%) per year to the year 2021 (i.e., the anticipated year of Project build-out). The ambient growth factor was based on general traffic growth factors provided in the *2010 Congestion Management Program for Los Angeles County* (“CMP manual”) and determined in consultation with City staff. It is noted that based on review of the general traffic growth factors provided in the CMP manual for the Project study area (i.e., RSA 21, Vernon), it is anticipated that the existing traffic volumes are expected to increase at an annual rate of approximately 0.79% per year between the years 2015 and 2025. Thus, application of an annual growth factor of 1.0% annual growth provides a conservative, worst case forecast of future traffic volumes in the area as it substantially exceeds the annual traffic growth rate published in the CMP manual. Further, it is noted that the CMP manual’s traffic growth rate is intended to anticipate future traffic generated by development projects in the Project vicinity. Thus, the inclusion in this traffic analysis of both a forecast of traffic generated by known related projects plus the use of an ambient growth traffic factor based on CMP traffic model data results in a conservative estimate of future traffic volumes at the study intersections.

7.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is trip generation, which estimates the total arriving and departing traffic volumes on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the Project development tabulation.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound Project traffic volumes. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of Project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and Project traffic assignments developed, the impact of the proposed Project is isolated by comparing operational (i.e., Levels of Service) conditions at the selected key intersections using existing and expected future traffic volumes without and with forecast Project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated and the significance of the Project's impacts identified.

7.1 Project Traffic Generation

Traffic volumes expected to be generated by the proposed Project during the weekday AM and PM peak hours, as well as on a daily basis, were estimated using rates published in the ITE *Trip Generation Manual*. The following trip generation rates were used to forecast the traffic volumes expected to be generated by the Project:

- Elementary School: ITE Land Use Code 520 (Elementary School) trip generation average rates were used to forecast the traffic volumes expected to be generated by elementary school component of the Project.
- Middle School: ITE Land Use Code 522 (Middle School/Junior High School) trip generation average rates were used to forecast the traffic volumes expected to be generated by the middle school component of the Project.

In addition to the trip generation forecasts for the proposed Project (which are essentially an estimate of the number of vehicles that could be expected to enter and exit the Project Site access points), an adjustment was made to the trip generation forecast based on the Project Site's existing land uses. The existing land uses to be removed are an auto repair shop providing 3,600 square feet of floor area and an industrial site providing 30,265 square feet of floor area. ITE Land Use Code 943 (Automobile Parts and Service Center) and ITE Land Use Code 110

(General Light Industrial) trip generation average rates were used to estimate the trip reduction related to the removal of the existing use from the Project Site.

As presented in *Table 7-1*, the proposed Project is expected to generate 647 net new vehicle trips (342 inbound trips and 305 outbound trips) during the AM peak hour. During the PM peak hour, the proposed Project is expected to generate 156 net new vehicle trips (84 inbound trips and 72 outbound trips). Over a 24-hour period, the proposed Project is forecast to generate 1,943 daily trips ends (approximately 972 inbound trips and 971 outbound trips) during a typical weekday.

7.2 Project Traffic Distribution and Assignment

Project traffic volumes both entering and exiting the site have been distributed and assigned to the adjacent street system based on the following considerations:

- The site's proximity to major traffic corridors (i.e., California Avenue, Atlantic Avenue, Florence Avenue, I-710 Freeway, etc.);
- Expected localized traffic flow patterns based on adjacent roadway channelization and presence of traffic signals;
- Existing intersection traffic volumes;
- Ingress/egress availability at the Project Site assuming the site access and circulation scheme described in Section 3.0;
- The location of existing and proposed parking areas;
- Nearby population and employment centers as well as adjacent residential neighborhoods;
- Input from City staff.

The general, directional traffic distribution patterns for the proposed Project are presented in *Figure 7-1*. The forecast net new weekday AM and PM peak hour Project traffic volumes at the study intersections associated with the proposed Project are presented in *Figures 7-2* and *7-3*, respectively. The traffic volume assignments presented in *Figures 7-2* and *7-3* reflect the traffic distribution characteristics shown in *Figure 7-1* and the Project traffic generation forecast presented in *Table 7-1*.

Table 7-1
PROJECT TRIP GENERATION [1]

27-Aug-19

LAND USE	SIZE	DAILY TRIP ENDS [2] VOLUMES	AM PEAK HOUR VOLUMES [2]		PM PEAK HOUR VOLUMES [2]		
			IN	OUT	IN	OUT	TOTAL
Proposed Project							
Charter Elementary School [3]	575 Students	1,087	208	177	47	51	98
Charter Middle School [4]	500 Students	<u>1,065</u>	<u>157</u>	<u>133</u>	<u>42</u>	<u>43</u>	<u>85</u>
Subtotal		2,152	365	310	89	94	183
Subtotal Project Driveway Trips		2,152	365	310	89	94	183
Existing Site							
Auto Repair Shop [5]	(3,600) GSF	(59)	(5)	(2)	(3)	(5)	(8)
Light Industrial [6]	(30,265) GSF	<u>(150)</u>	<u>(18)</u>	<u>(3)</u>	<u>(2)</u>	<u>(17)</u>	<u>(19)</u>
Subtotal		(209)	(23)	(5)	(5)	(22)	(27)
Subtotal Existing Driveway Trips		(209)	(23)	(5)	(5)	(22)	(27)
NET INCREASE DRIVEWAY TRIPS		1,943	342	305	84	72	156

[1] Source: ITE "Trip Generation Manual", 10th Edition, 2017.

[2] Trips are one-way traffic movements, entering or leaving.

[3] ITE Land Use Code 520 (Elementary School) trip generation average rates per number of students.

- Daily Trip Rate: 1.89 trips/student; 50% inbound and 50% outbound

- AM Peak Hour Trip Rate: 0.67 trips/student; 54% inbound/46% outbound

- PM Peak Hour Trip Rate: 0.17 trips/student; 48% inbound/52% outbound

[4] ITE Land Use Code 522 (Middle School/Junior High School) trip generation average rates per number of students.

- Daily Trip Rate: 2.13 trips/student; 50% inbound and 50% outbound

- AM Peak Hour Trip Rate: 0.58 trips/student; 54% inbound/46% outbound

- PM Peak Hour Trip Rate: 0.17 trips/student; 49% inbound/51% outbound

[5] ITE Land Use Code 943 (Automobile Parts and Service Center) trip generation average rates.

- Daily Trip Rate: 16.28 trips/1,000 SF of floor area; 50% inbound and 50% outbound

- AM Peak Hour Trip Rate: 1.96 trips/1,000 SF of floor area; 73% inbound/27% outbound

- PM Peak Hour Trip Rate: 2.26 trips/1,000 SF of floor area; 40% inbound/60% outbound

[6] ITE Land Use Code 110 (General Light Industrial) trip generation average rates.

- Daily Trip Rate: 4.96 trips/1,000 SF of floor area; 50% inbound and 50% outbound

- AM Peak Hour Trip Rate: 0.70 trips/1,000 SF of floor area; 88% inbound/12% outbound

- PM Peak Hour Trip Rate: 0.63 trips/1,000 SF of floor area; 13% inbound/87% outbound

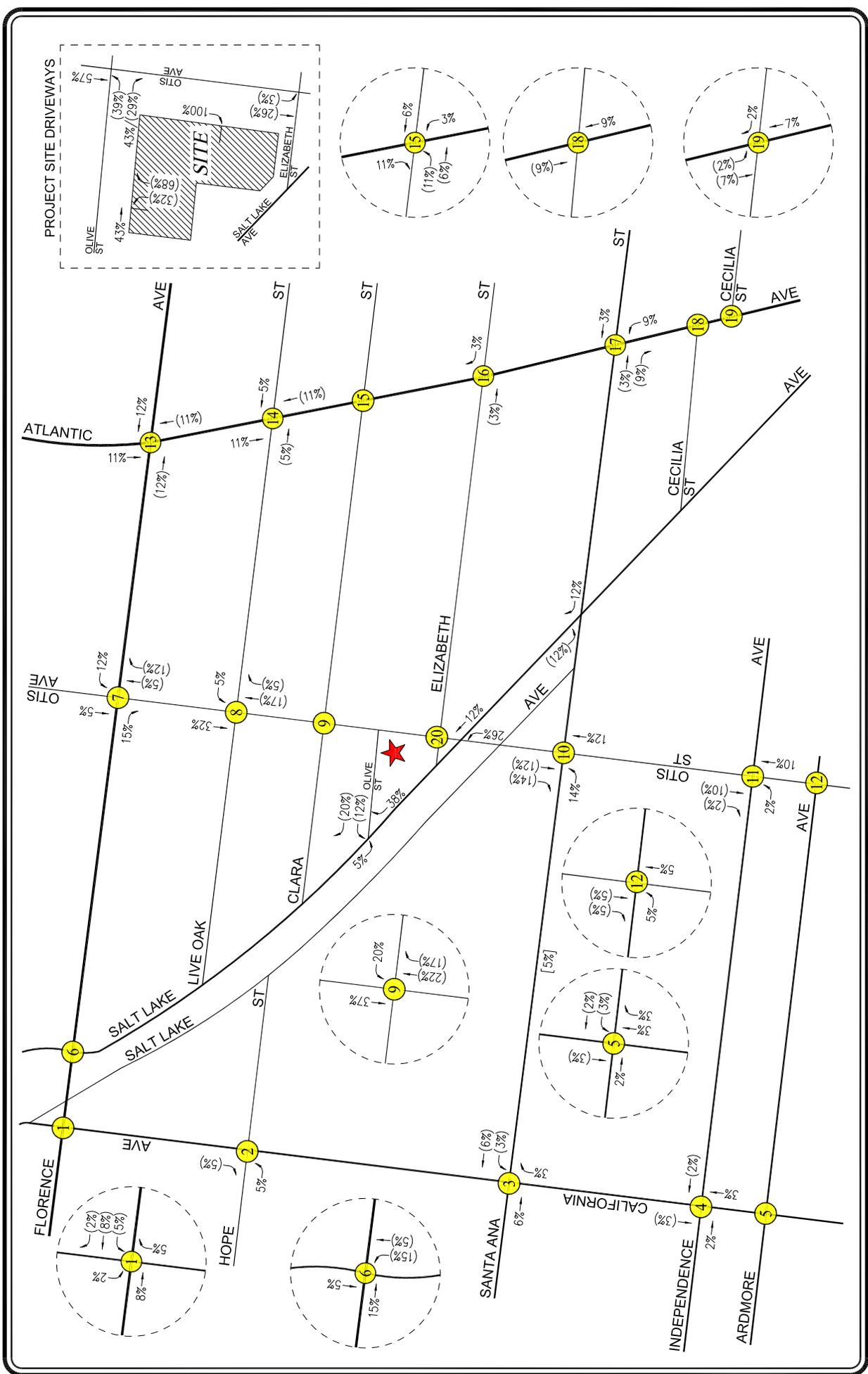


FIGURE 7-1
PROJECT TRIP DISTRIBUTION

7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

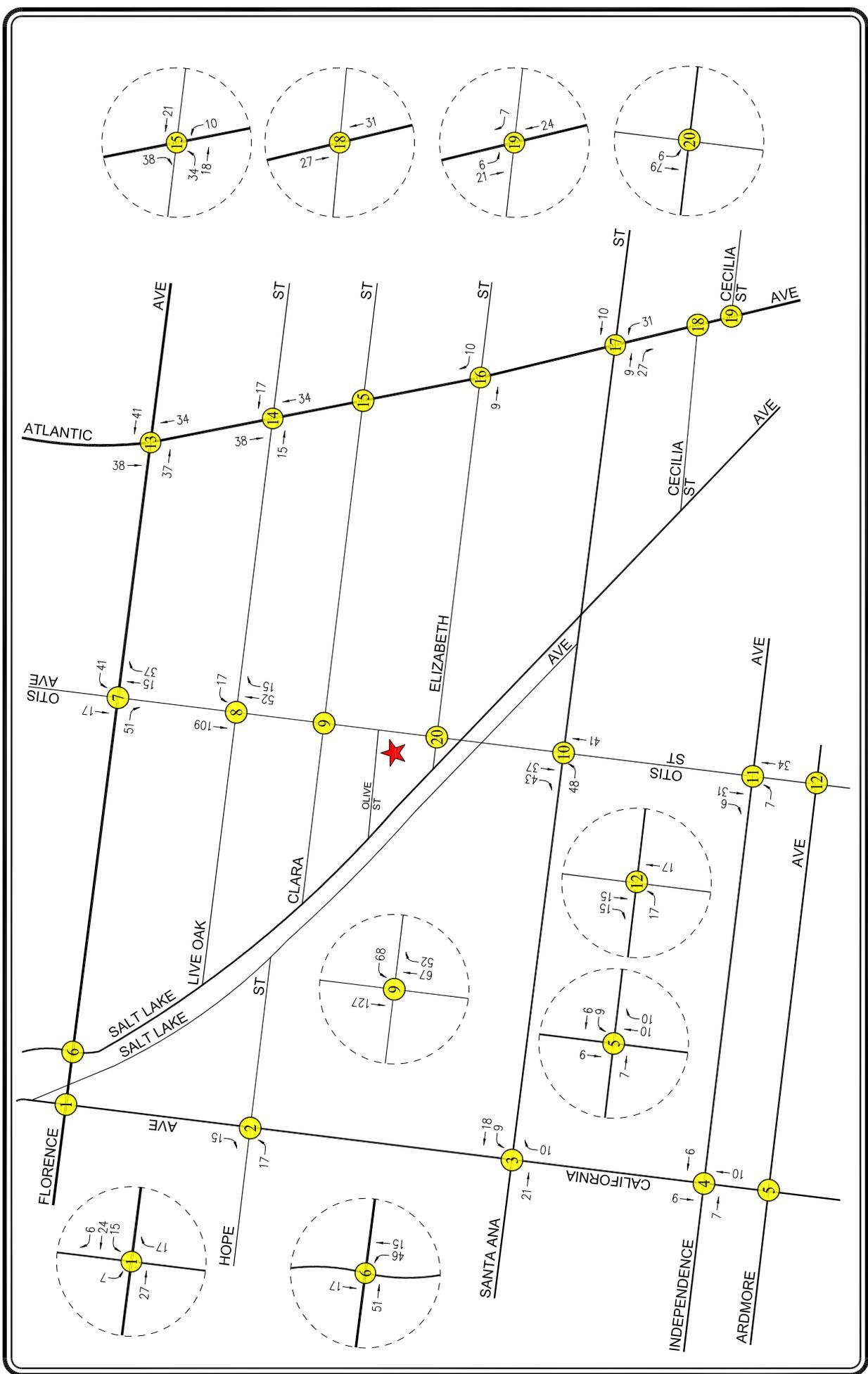
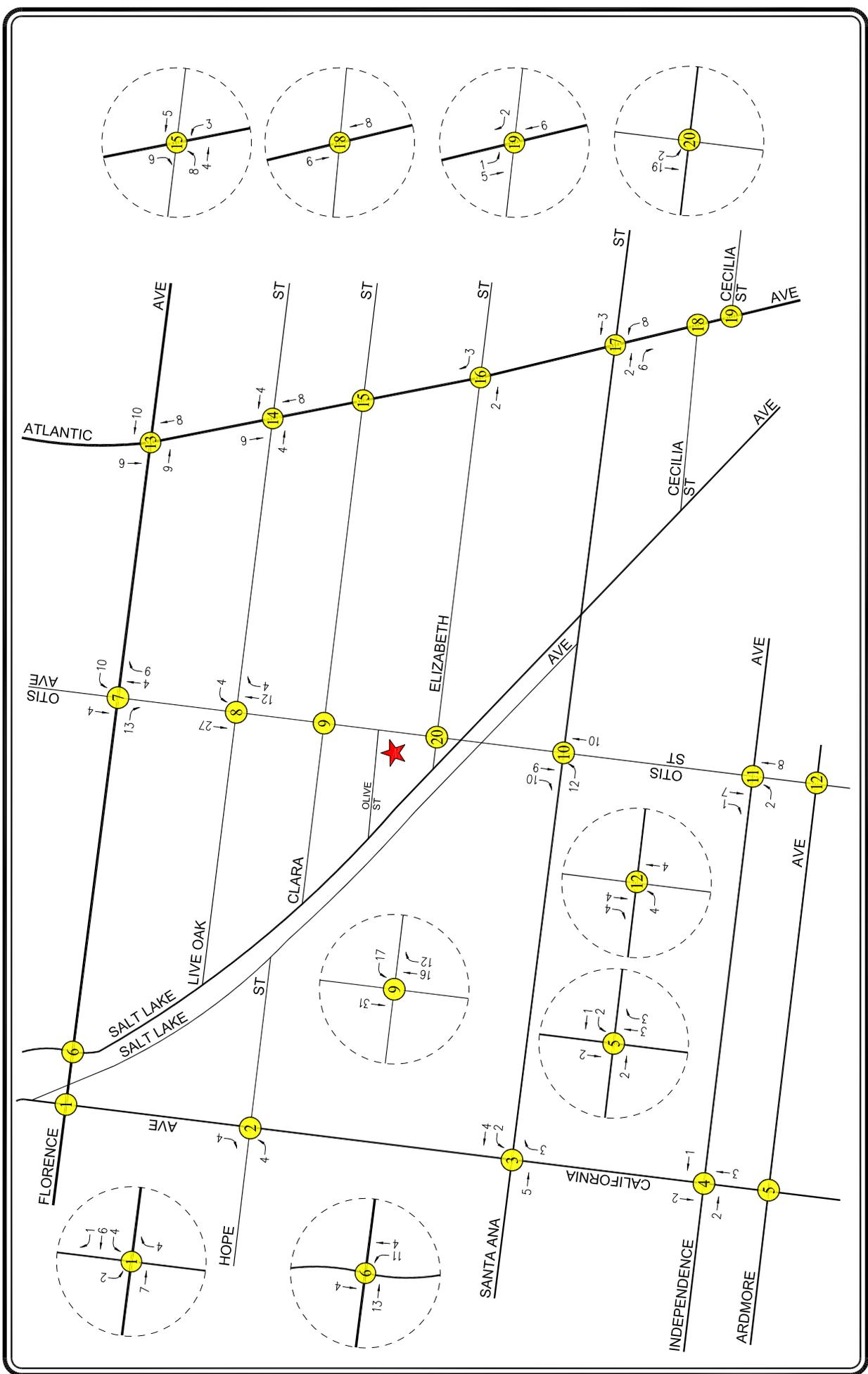


FIGURE 7-2
NET NEW PROJECT TRAFFIC VOLUMES
 WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT


NOT TO SCALE
 PROJECT SITE
 STUDY INTERSECTION



NOT TO SCALE

- ★ PROJECT SITE
- ⊗ STUDY INTERSECTION

FIGURE 7-3
NET NEW PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR
7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

8.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

Operations at the 20 study intersections located within the City of Cudahy and/or the City of Bell, the City of Huntington Park, and the City of South Gate were evaluated using the Highway Capacity Manual (HCM 2010) method of analysis based on direction from the City of Cudahy. Specifically, the HCM 2010 methodology estimates the average control delay for each of the subject movements and determines the LOS for each constrained movement. The overall intersection average control delay is subsequently assigned a LOS value to describe intersection operations.

The Levels of Service under the HCM 2010 methodology for both signalized and all-way stop controlled (AWSC) study intersections vary from LOS A (free flow) to LOS F (jammed condition). A description of the HCM 2010 method and corresponding LOS for the Cities of Cudahy, Bell, Huntington Park, and South Gate are provided in *Appendix B, C, D, and E*, respectively.

8.1 Impact Criteria and Thresholds

The relative impact of the added Project traffic volumes to be generated by the proposed Project during the AM and PM peak hours was evaluated based on analysis of future operating conditions at the study intersections, without and with the proposed Project. The previously discussed capacity analysis procedures were utilized to evaluate the future delay relationships and service level characteristics at each study intersection.

8.1.1 City of Cudahy Impact Criteria and Thresholds

The significance of the potential impacts of Project-generated traffic at all 20 study intersections was identified in consultation with City staff. Accordingly, the impact is considered significant if the Project-related increase in delay equals or exceeds the thresholds presented in *Tables 8-1* and *8-2* for signalized and unsignalized intersections, respectively.

Table 8-1 CITY OF CUDAHY SIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA		
Level of Service	Project Increase in Delay Commercial Corridor Intersection	Project Increase in Delay Signalized Intersection
D	12 seconds	8 seconds
E	8 seconds	8 seconds
F	8 seconds	5 seconds

Table 8-2 CITY OF CUDAHY UNSIGNALIZED INTERSECTION IMPACT THRESHOLD CRITERIA	
Level of Service	Project Increase in Delay Stop-Controlled Intersection
D	5 seconds
E	5 seconds
F	5 seconds

As required by the City, mitigation of Project traffic impacts are required whenever traffic generated by the proposed development causes an increase of the analyzed intersection delay by an amount equal to or greater than the values shown above.

8.2 Traffic Impact Analysis Scenarios

LOS calculations have been prepared for the following scenarios for the 20 study intersections:

- (a) Existing (2019) conditions.
- (b) Condition (a) with completion and occupancy of the Project.
- (c) Condition (b) with implementation of Project mitigation measures where necessary.
- (d) Condition (a) plus one percent (1.0%) annual ambient traffic growth through year 2021 and with completion and occupancy of the related projects (i.e., future cumulative baseline)
- (e) Condition (d) with completion and occupancy of the Project.
- (f) Condition (e) with implementation of Project mitigation measures where necessary.

The traffic volumes for each new condition were added to the volumes in the prior condition to determine the change in capacity utilization at the study intersections.

9.0 CITY OF CUDAHY TRAFFIC ANALYSIS

The traffic impact analysis prepared for the ten study intersections located within the City of Cudahy using the HCM 2010 methodology and application of the significant traffic impact criteria as consulted with the City is summarized in **Table 9-1**. The HCM 2010 data worksheets for the analyzed intersections are contained in *Appendix B*.

9.1 Existing Conditions

9.1.1 Existing Conditions

As indicated in column [1] of *Table 9-1*, nine of the ten study intersections located within the City of Cudahy are presently operating at LOS C or better during the weekday AM and PM peak hours under existing conditions. The following intersection is presently operating at LOS D or worse during the peak hours shown below under existing conditions:

- Int. No. 13: Atlantic Avenue / Florence Avenue
AM Peak Hour: Delay = 40.4 sec., LOS D
PM Peak Hour: Delay = 37.3 sec., LOS D

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in *Figures 5-1* and *5-2*, respectively.

9.1.2 Existing with Project Conditions

As shown in column [2] of *Table 9-1*, application of the threshold criteria to the “Existing with Project” scenario indicates that the Project is not expected to create significant impacts at any of the ten study intersections located within the City of Cudahy. Incremental, but not significant, impacts are noted at the study intersections. Therefore, no mitigation measures are required or recommended with respect to these intersections under the “Existing with Project” conditions. The “Existing with Project” traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-1* and *9-2*, respectively.

9.2 Future Conditions

9.2.1 Future Cumulative Baseline Conditions

The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The delay values at all of the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 6-1*.

As presented in column [3] of *Table 9-1*, nine of the ten study intersections located within the City of Cudahy are expected to operate at LOS C or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related project traffic under the future cumulative baseline conditions. The following study intersection is expected to operate at LOS D during the peak hours shown below under future cumulative baseline conditions:

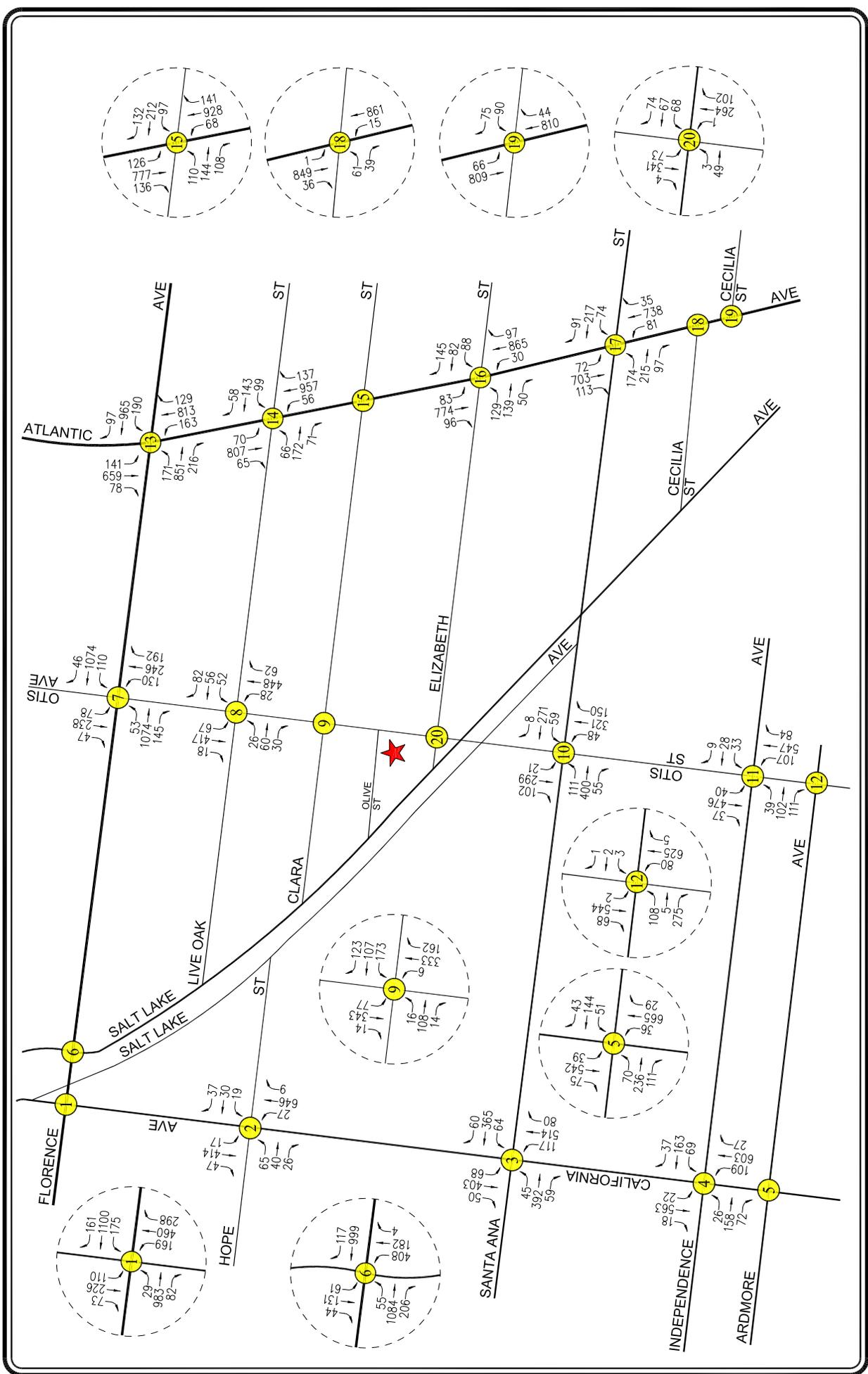
Table 9-1
SUMMARY OF DELAY VALUES
AND LEVELS OF SERVICE [A]
AM AND PM PEAK HOURS
CITY OF CUDAHY INTERSECTIONS

13 Dec 19

NO.	INTERSECTION	INTERSECTION TYPE	PEAK HOUR	[1]			[2]			[3]			[4]			
				YEAR 2019 EXISTING DELAY [B]	LOS [C]	SIGNIF. IMPACT [D]	YEAR 2019 EXISTING PLUS PROPOSED PROJECT DELAY	LOS	CHANGE DELAY [(2)-(1)]	YEAR 2021 FUTURE DELAY [B]	LOS [C]	SIGNIF. IMPACT [D]	YEAR 2021 FUTURE PLUS PROPOSED PROJECT DELAY	LOS	CHANGE DELAY [(4)-(3)]	SIGNIF. IMPACT [D]
8	Otis Avenue / Live Oak Street	Signalized	AM PM	12.5 10.9	B B	NO NO	12.3 10.8	B B	-0.2 -0.1	12.5 10.7	B B	NO NO	12.3 10.6	B B	-0.2 -0.1	NO NO
9	Otis Avenue / Clara Street	Signalized	AM PM	19.5 16.2	B B	NO NO	22.9 16.5	C B	3.4 0.3	20.1 17.2	C B	NO NO	25.6 17.6	C B	5.5 0.4	NO NO
13	Atlantic Avenue / Florence Avenue	Commercial Corridor	AM PM	40.4 37.3	D D	NO NO	42.5 37.7	D D	2.1 0.4	43.9 40.8	D D	NO NO	46.5 41.2	D D	2.6 0.4	NO NO
14	Atlantic Avenue / Live Oak Street	Commercial Corridor	AM PM	19.8 17.9	B B	NO NO	20.4 18.1	C B	0.6 0.2	20.3 18.4	C B	NO NO	20.9 18.6	C B	0.6 0.2	NO NO
15	Atlantic Avenue / Clara Street	Commercial Corridor	AM PM	26.6 23.2	C C	NO NO	28.6 23.5	C C	2.0 0.3	29.0 26.2	C C	NO NO	30.6 26.5	C C	1.6 0.3	NO NO
16	Atlantic Avenue / Elizabeth Street	Commercial Corridor	AM PM	20.4 18.6	C B	NO NO	20.8 18.7	C B	0.4 0.1	21.5 19.4	C B	NO NO	22.0 19.5	C B	0.5 0.1	NO NO
17	Atlantic Avenue / Santa Ana Street	Commercial Corridor	AM PM	21.4 21.2	C C	NO NO	22.8 21.5	C C	1.4 0.3	21.9 22.1	C C	NO NO	23.2 22.6	C C	1.3 0.5	NO NO
18	Atlantic Avenue / N. Cecilia Street	Commercial Corridor	AM PM	5.5 5.4	A A	NO NO	5.5 5.4	A A	0.0 0.0	5.5 5.4	A A	NO NO	5.5 5.4	A A	0.0 0.0	NO NO
19	Atlantic Avenue / S. Cecilia Street	Commercial Corridor	AM PM	7.1 6.0	A A	NO NO	7.2 6.0	A A	0.1 0.0	7.2 6.1	A A	NO NO	7.3 6.1	A A	0.1 0.0	NO NO
20	Otis Avenue / Elizabeth Street	All-Way Stop-Controlled	AM PM	13.8 16.2	B C	NO NO	15.7 16.9	C C	1.9 0.7	14.8 18.4	B C	NO NO	17.2 19.3	C C	2.4 0.9	NO NO

- [A] Intersection analysis based on the Highway Capacity Manual 2010 operational analysis methodologies, per the City of Cudahy.
 [B] Control delay reported in seconds per vehicle.
 [C] Signalized Intersection Levels of Service were based on the following criteria:
- | | |
|------------------------------|------------|
| <u>Control Delay (s/veh)</u> | <u>LOS</u> |
| <= 10 | A |
| > 10-20 | B |
| > 20-35 | C |
| > 35-55 | D |
| > 55-80 | E |
| > 80 | F |
- Unsignalized Intersection Levels of Service were based on the following criteria:
- | | |
|------------------------------|------------|
| <u>Control Delay (s/veh)</u> | <u>LOS</u> |
| <= 10 | A |
| > 10-15 | B |
| > 15-25 | C |
| > 25-35 | D |
| > 35-50 | E |
| > 50 | F |

- [D] A transportation impact on an intersection shall be deemed significant in accordance with the following criteria:
- | | | | |
|------------------------------------------|----------------------------|-------------------|------------------------|
| <u>Project Related Increase in Delay</u> | | | |
| <u>LOS</u> | <u>Commercial Corridor</u> | <u>Signalized</u> | <u>Stop-Controlled</u> |
| D | 12 seconds | 8 seconds | 5 seconds |
| E | 8 seconds | 5 seconds | 5 seconds |
| F | 8 seconds | 5 seconds | 5 seconds |



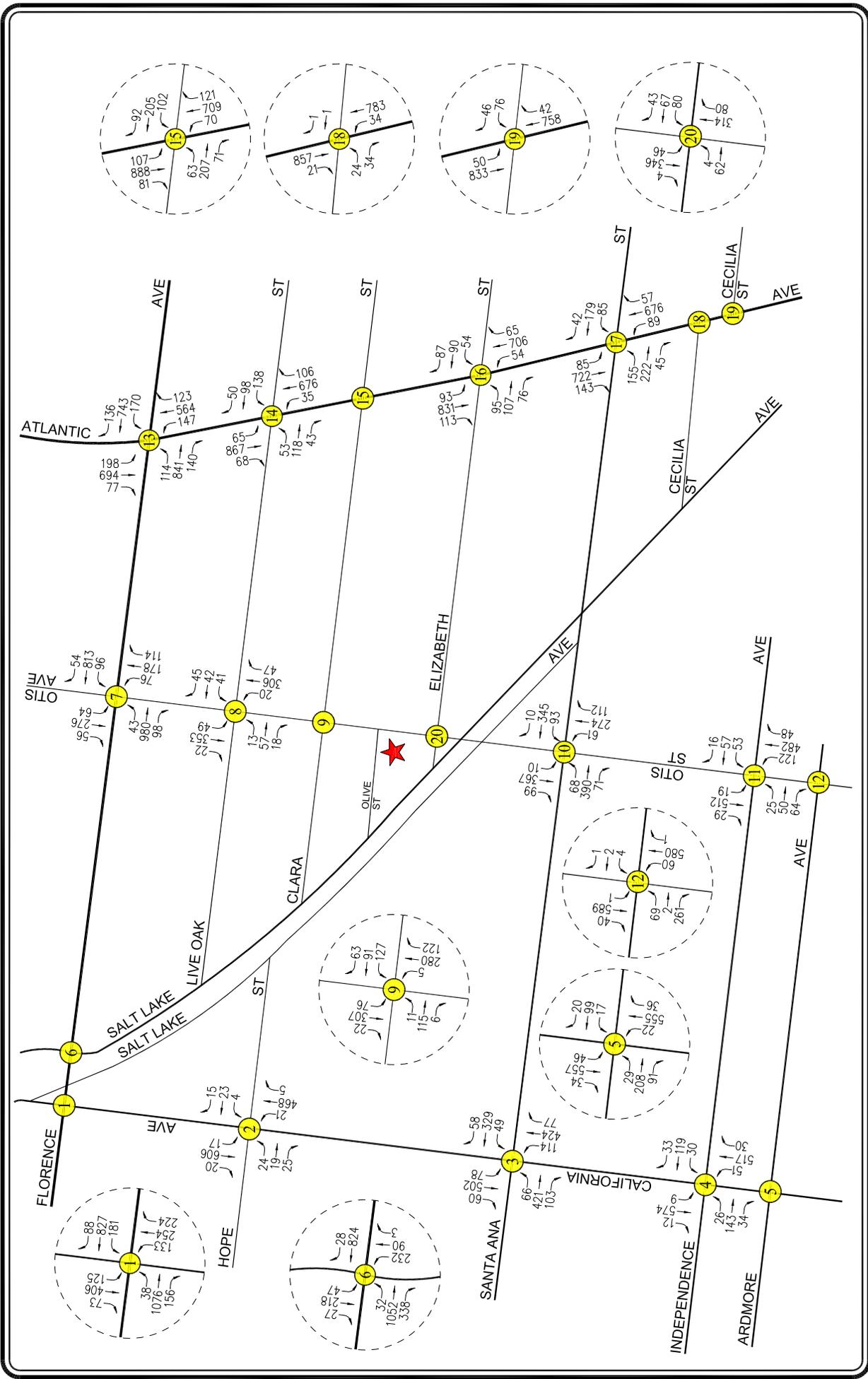
NOT TO SCALE

- ★ PROJECT SITE
- ⊗ STUDY INTERSECTION

FIGURE 9-1
EXISTING WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers



NOT TO SCALE

- ★ PROJECT SITE
- ⊗ STUDY INTERSECTION

FIGURE 9-2
EXISTING WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR
7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

- Int. No. 13: Atlantic Avenue / Florence Avenue

AM Peak Hour: Delay = 43.9 sec., LOS D
PM Peak Hour: Delay = 40.8 sec., LOS D

The future cumulative baseline (existing, ambient growth and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in **Figures 9-3** and **9-4**, respectively.

9.2.2 Future Cumulative with Project Conditions

The “Future Cumulative with Project” conditions were forecast based on the addition of traffic generated by the Project plus completion and occupancy of related projects. As shown in column [4] of *Table 9-1*, application of the threshold criteria to the “Future Cumulative with Project” scenario indicates that the proposed Project is not expected to create significant impacts at any of the ten study intersections located within the City of Cudahy. Therefore, no mitigation measures are required or recommended with respect to these intersections under the “Future Cumulative with Project” conditions. The “Future Cumulative with Project” (existing, ambient growth, related projects, and Project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in **Figures 9-5** and **9-6**, respectively.

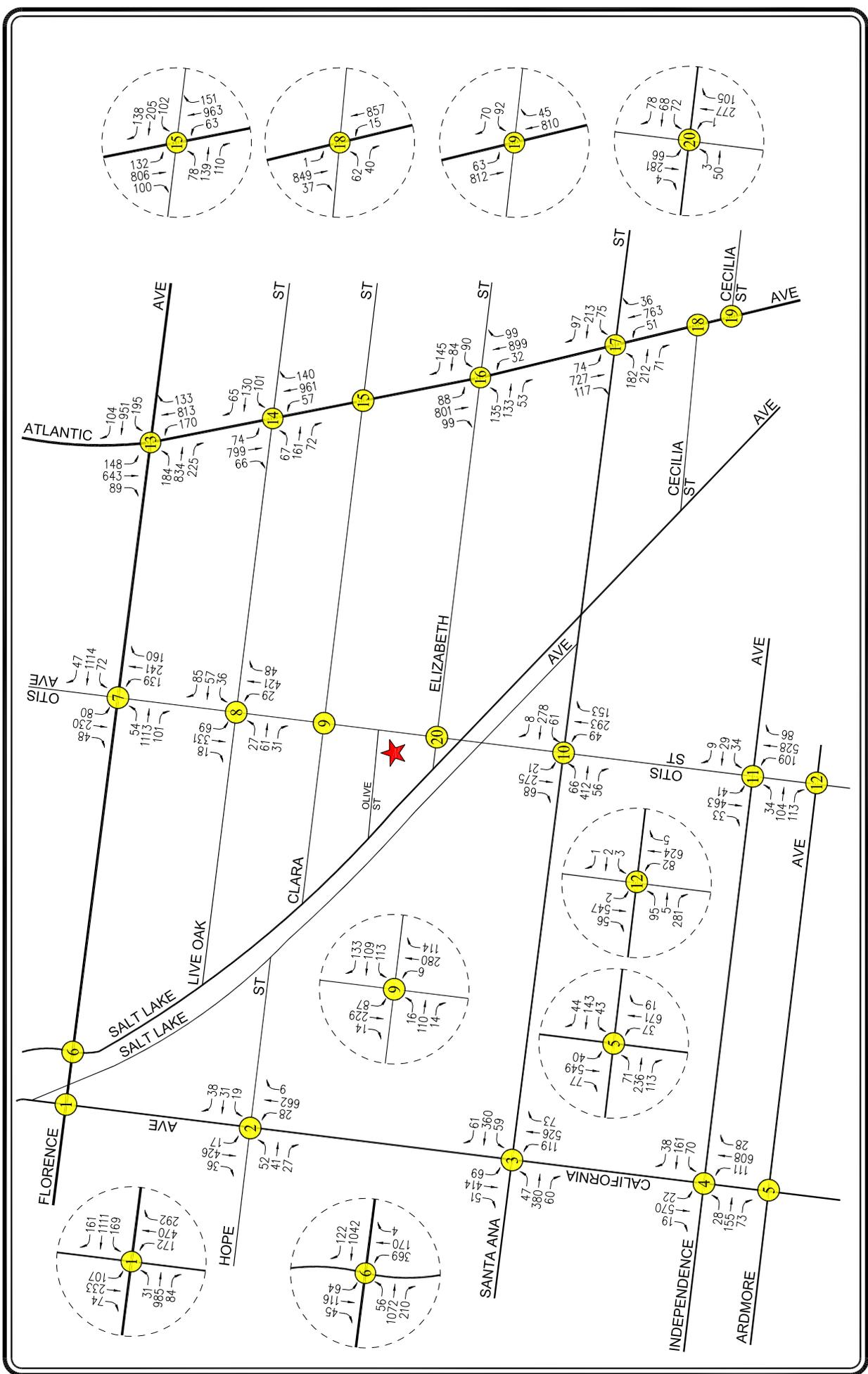


FIGURE 9-3
FUTURE CUMULATIVE BASELINE TRAFFIC VOLUMES
 WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

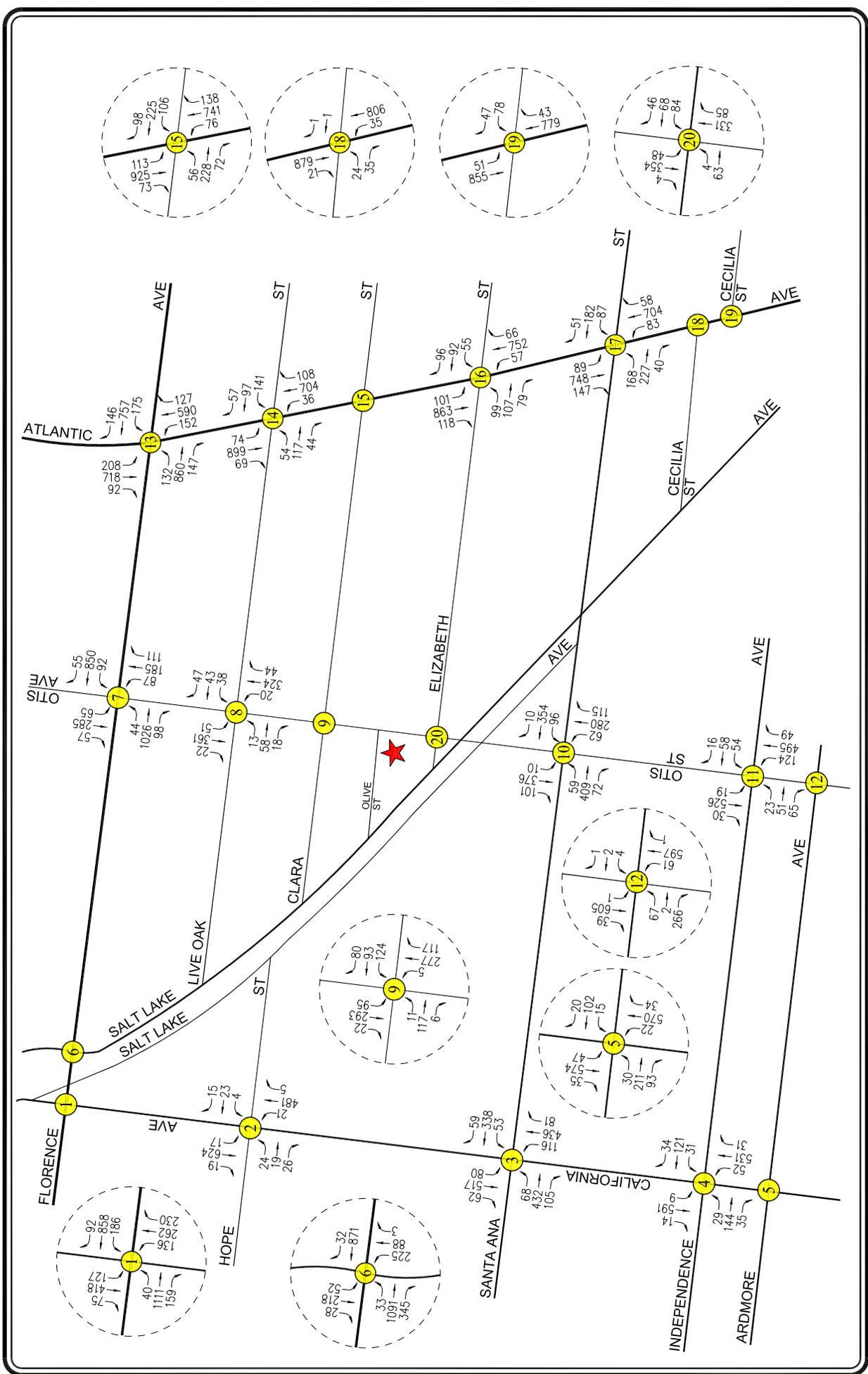


FIGURE 9-4
FUTURE CUMULATIVE BASELINE TRAFFIC VOLUMES
 WEEKDAY PM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

PROJECT SITE
 STUDY INTERSECTION

NOT TO SCALE

LINSCOTT, LAW & GREENSPAN, engineers

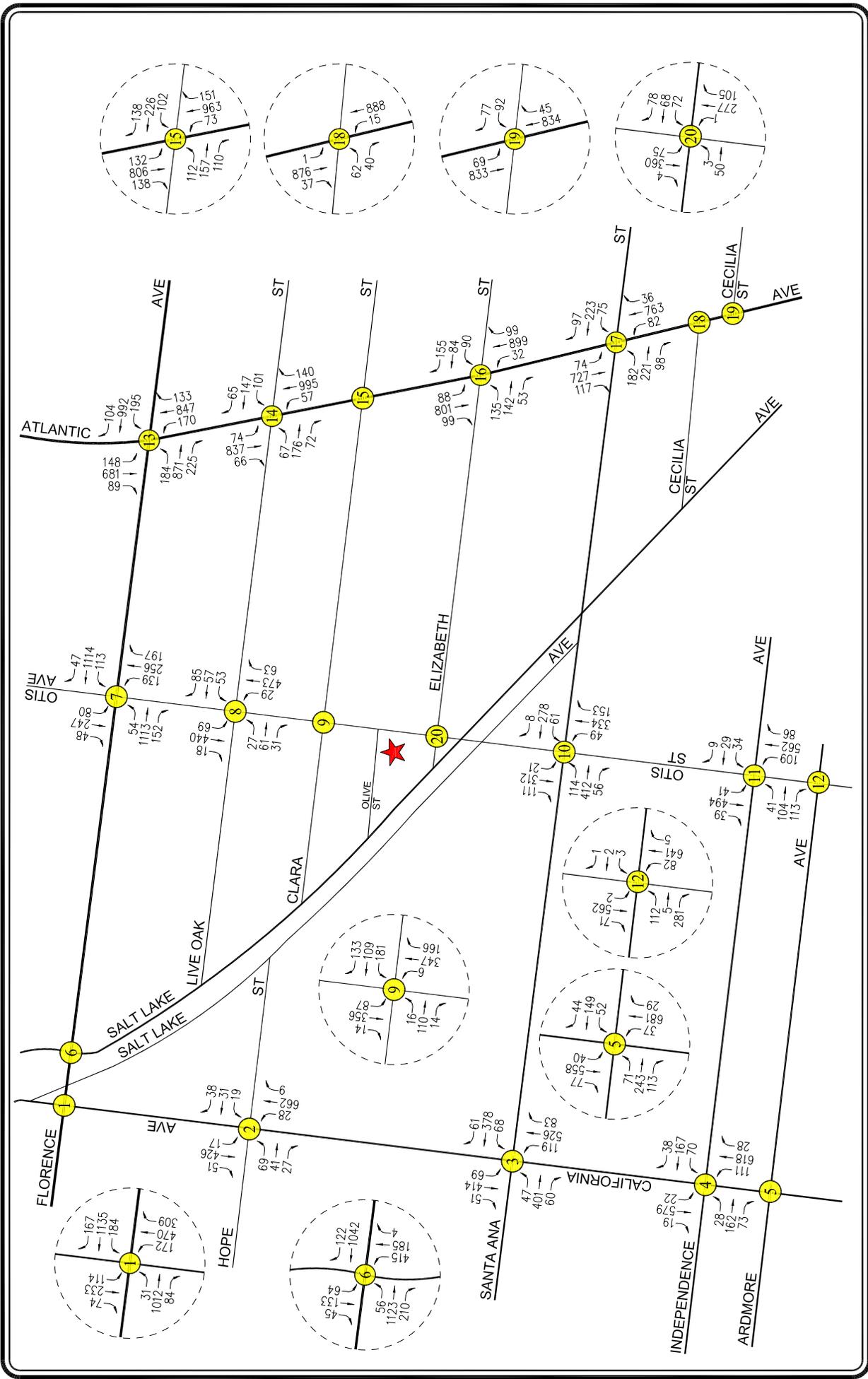
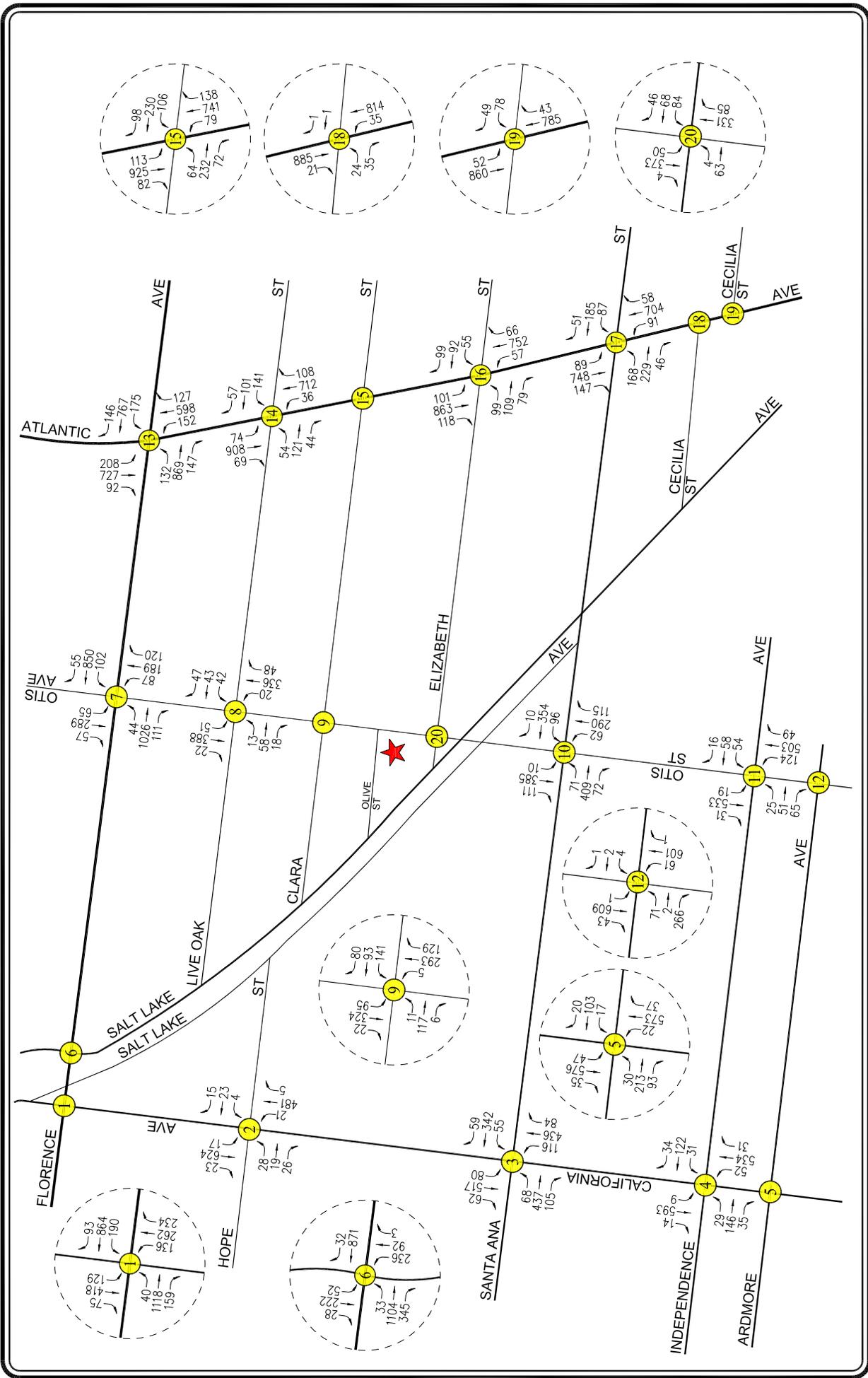


FIGURE 9-5
FUTURE CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY AM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

LINSCOTT, LAW & GREENSPAN, engineers



NOT TO SCALE

- ★ PROJECT SITE
- ⊗ STUDY INTERSECTION

FIGURE 9-6
FUTURE CUMULATIVE WITH PROJECT TRAFFIC VOLUMES

WEEKDAY PM PEAK HOUR
 7801-7835 OTIS AVENUE CHARTER SCHOOL PROJECT

10.0 CITY OF BELL TRAFFIC ANALYSIS

The traffic impact analysis prepared for the three study intersections located within the City of Bell using the HCM 2010 methodology and application of the significant traffic impact criteria as consulted with the City of Cudahy is summarized in **Table 10-1**. The HCM 2010 data worksheets for the analyzed intersections are contained in *Appendix C*.

10.1 Existing Conditions

10.1.1 Existing Conditions

As indicated in column [1] of *Table 10-1*, two of the three study intersections located within the City of Los Angeles are presently operating at LOS C or better during the weekday AM and PM peak hours under existing conditions. The following intersection is presently operating at LOS D or worse during the peak hours shown below under existing conditions:

- Int. No. 13: Atlantic Avenue / Florence Avenue
AM Peak Hour: Delay = 40.4 sec., LOS D
PM Peak Hour: Delay = 37.3 sec., LOS D

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5-1* and *5-2*, respectively.

10.1.2 Existing with Project Conditions

As shown in column [2] of *Table 10-1*, application of the City's threshold criteria to the "Existing with Project" scenario indicates that the Project is not expected to create significant impacts at any of the three study intersections located within the City of Bell. Incremental, but not significant, impacts are noted at the study intersections. Therefore, no mitigation measures are required or recommended with respect to these intersections under the "Existing with Project" conditions. The "Existing with Project" traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-1* and *9-2*, respectively.

10.2 Future Conditions

10.2.1 Future Cumulative Baseline Conditions

The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The delay values at all of the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 6-1*.

As presented in column [3] of *Table 10-1*, two of the three study intersections located within the City of Bell are expected to operate at LOS C or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related project traffic under the future cumulative baseline conditions. The following study intersection is expected to operate at LOS D during the peak hour shown below under future cumulative baseline conditions:

Table 10-1
SUMMARY OF DELAY VALUES
AND LEVELS OF SERVICE [A]
AM AND PM PEAK HOURS
CITY OF BELL INTERSECTIONS

16Dec 19

NO.	INTERSECTION	INTERSECTION TYPE	PEAK HOUR	[1] YEAR 2019 EXISTING		[2] YEAR 2019 EXISTING PLUS PROPOSED PROJECT		[3] YEAR 2021 FUTURE		[4] YEAR 2021 FUTURE PLUS PROPOSED PROJECT			
				DELAY [B]	LOS [C]	DELAY [(2)-(1)]	SIGNIF. IMPACT [D]	DELAY [B]	LOS [C]	DELAY	LOS	CHANGE DELAY [(4)-(3)]	SIGNIF. IMPACT [D]
6	California Avenue - Salt Lake Avenue / Florence Avenue	Commercial Corridor	AM PM	27.5 22.9	C C	33.3 23.7	C C	28.7 23.8	C C	34.6 24.6	C C	5.9 0.8	NO NO
7	Otis Avenue / Florence Avenue	Commercial Corridor	AM PM	25.7 21.1	C C	30.7 21.8	C C	27.2 22.2	C C	32.4 22.9	C C	5.2 0.7	NO NO
13	Atlantic Avenue / Florence Avenue	Commercial Corridor	AM PM	40.4 37.3	D D	42.5 37.7	D D	43.9 40.8	D D	46.5 41.2	D D	2.6 0.4	NO NO

[A] Intersection analysis based on the Highway Capacity Manual 2010 operational analysis methodologies, per the City of Cudahy.

[B] Control delay reported in seconds per vehicle.

[C] Signalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-20	B
> 20-35	C
> 35-55	D
> 55-80	E
> 80	F

[D] A transportation impact on an intersection shall be deemed significant in accordance with the following criteria:

LOS	Commercial Corridor	Signalized	Stop-Controlled
D	12 seconds	8 seconds	5 seconds
E	8 seconds	5 seconds	5 seconds
F	8 seconds	5 seconds	5 seconds

Unsignalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-15	B
> 15-25	C
> 25-35	D
> 35-50	E
> 50	F

- Int. No. 13: Atlantic Avenue / Florence Avenue

AM Peak Hour: Delay = 43.9 sec., LOS D
PM Peak Hour: Delay = 40.8 sec., LOS D

The future cumulative baseline (existing, ambient growth and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in *Figures 9-3* and *9-4*, respectively.

10.2.2 *Future Cumulative with Project Conditions*

The “Future Cumulative with Project” conditions were forecast based on the addition of traffic generated by the Project plus completion and occupancy of related projects. As shown in column [4] of *Table 10-1*, application of the City’s threshold criteria to the “Future Cumulative with Project” scenario indicates that the proposed Project is not expected to create significant impacts at any of the three study intersections located within the City of Bell. Therefore, no mitigation measures are required or recommended with respect to these intersections under the “Future Cumulative with Project” conditions. The “Future Cumulative with Project” (existing, ambient growth, related projects, and Project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-5* and *9-6*, respectively.

11.0 CITY OF HUNTINGTON PARK TRAFFIC ANALYSIS

The traffic impact analysis prepared for the five study intersections located within the City of Huntington Park using the HCM 2010 methodology and application of the significant traffic impact criteria as consulted with the City of Cudahy is summarized in **Table 11-1**. The HCM 2010 data worksheets for the analyzed intersections are contained in *Appendix D*.

11.1 Existing Conditions

11.1.1 Existing Conditions

As indicated in column [1] of *Table 11-1*, three of the five study intersections located within the City of Huntington Park are presently operating at LOS C or better during the weekday AM and PM peak hours under existing conditions. The following intersections are presently operating at LOS D or worse during the peak hours shown below under existing conditions:

- Int. No. 1: Salt Lake Avenue – California Avenue / Florence Avenue
AM Peak Hour: Delay = 37.7 sec., LOS D
PM Peak Hour: Delay = 36.1 sec., LOS D
- Int. No. 3: California Avenue / Santa Ana Street
PM Peak Hour: Delay = 37.2 sec., LOS D

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5-1* and *5-2*, respectively.

11.1.2 Existing with Project Conditions

As shown in column [2] of *Table 11-1*, application of the City's threshold criteria to the "Existing with Project" scenario indicates that the Project is not expected to create significant impacts at any of the five study intersections located within the City of Huntington Park. Incremental, but not significant, impacts are noted at the study intersections. Therefore, no mitigation measures are required or recommended with respect to these intersections under the "Existing with Project" conditions. The "Existing with Project" traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-1* and *9-2*, respectively.

11.2 Future Conditions

11.2.1 Future Cumulative Baseline Conditions

The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The delay values at all of the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 6-1*.

Table 11-1
SUMMARY OF DELAY VALUES
AND LEVELS OF SERVICE [A]
AM AND PM PEAK HOURS
CITY OF HUNTINGTON PARK INTERSECTIONS

16Dec 19

NO.	INTERSECTION	INTERSECTION TYPE	PEAK HOUR	[1]		[2]			[3]		[4]				
				YEAR 2019 EXISTING DELAY [B]	LOS [C]	YEAR 2019 EXISTING PROPOSED DELAY	LOS	CHANGE DELAY [(2)-(1)]	SIGNIF. IMPACT [D]	YEAR 2021 FUTURE DELAY [B]	LOS [C]	YEAR 2021 FUTURE PROPOSED DELAY	LOS	CHANGE DELAY [(4)-(3)]	SIGNIF. IMPACT [D]
1	Salt Lake Avenue - California Avenue / Florence Avenue	Commercial Corridor	AM PM	37.7 36.1	D D	39.4 36.5	D D	1.7 0.4	NO NO	39.5 37.9	D D	41.4 38.4	D D	1.9 0.5	NO NO
2	California Avenue / Hope Street	Signalized	AM PM	8.9 5.9	A A	9.5 6.0	A A	0.6 0.1	NO NO	9.1 6.0	A A	9.7 6.2	A A	0.6 0.2	NO NO
3	California Avenue / Santa Ana Street	Signalized	AM PM	25.6 37.2	C D	28.6 38.3	C D	3.0 1.1	NO NO	27.1 41.1	C D	30.9 42.3	C D	3.8 1.2	NO NO
6	California Avenue - Salt Lake Avenue / Florence Avenue	Commercial Corridor	AM PM	27.5 22.9	C C	33.3 23.7	C C	5.8 0.8	NO NO	28.7 23.8	C C	34.6 24.6	C C	5.9 0.8	NO NO
10	Otis Avenue - Otis Street / Santa Ana Street	Signalized	AM PM	20.0 21.1	C C	21.4 21.8	C C	1.4 0.7	NO NO	20.3 22.3	C C	21.9 23.2	C C	1.6 0.9	NO NO

[A] Intersection analysis based on the Highway Capacity Manual 2010 operational analysis methodologies, per the City of Cataly.

[B] Control delay reported in seconds per vehicle.

[C] Signalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-20	B
> 20-35	C
> 35-55	D
> 55-80	E
> 80	F

[D] A transportation impact on an intersection shall be deemed significant in accordance with the following criteria:

LOS	Commercial Corridor	Signalized	Stop-Controlled
D	12 seconds	8 seconds	5 seconds
E	8 seconds	5 seconds	5 seconds
F	8 seconds	5 seconds	5 seconds

Unsignalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-15	B
> 15-25	C
> 25-35	D
> 35-50	E
> 50	F

As presented in column [3] of *Table 11-1*, three of the five study intersections located within the City of Huntington Park are expected to operate at LOS C or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related project traffic under the future cumulative baseline conditions. The following study intersections are expected to operate at LOS D during the peak hour shown below under future cumulative baseline conditions:

- Int. No. 1: Salt Lake Avenue – AM Peak Hour: Delay = 39.5 sec., LOS D
California Avenue / Florence Avenue PM Peak Hour: Delay = 37.9 sec., LOS D
- Int. No. 3: California Avenue / PM Peak Hour: Delay = 41.1 sec., LOS D
Santa Ana Street

The future cumulative baseline (existing, ambient growth and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in *Figures 9-3* and *9-4*, respectively.

11.2.2 *Future Cumulative with Project Conditions*

The “Future Cumulative with Project” conditions were forecast based on the addition of traffic generated by the Project plus completion and occupancy of related projects. As shown in column [4] of *Table 11-1*, application of the City’s threshold criteria to the “Future Cumulative with Project” scenario indicates that the proposed Project is not expected to create significant impacts at any of the five study intersections located within the City of Huntington Park. Therefore, no mitigation measures are required or recommended with respect to these intersections under the “Future Cumulative with Project” conditions. The “Future Cumulative with Project” (existing, ambient growth, related projects, and Project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-5* and *9-6*, respectively.

12.0 CITY OF SOUTH GATE TRAFFIC ANALYSIS

The traffic impact analysis prepared for the six study intersections located within the City of South Gate using the HCM 2010 methodology and application of the significant traffic impact criteria as consulted with the City of Cudahy is summarized in **Table 12-1**. The HCM 2010 data worksheets for the analyzed intersections are contained in *Appendix E*.

12.1 Existing Conditions

12.1.1 Existing Conditions

As indicated in column [1] of *Table 12-1*, five of the six study intersections located within the City of South Gate are presently operating at LOS C or better during the weekday AM and PM peak hours under existing conditions. The following intersection is presently operating at LOS D or worse during the peak hours shown below under existing conditions:

- Int. No. 3: California Avenue / Santa Ana Street PM Peak Hour: Delay = 37.2 sec., LOS D

The existing traffic volumes at the study intersections during the weekday AM and PM peak hours are displayed in *Figures 5-1* and *5-2*, respectively.

12.1.2 Existing with Project Conditions

As shown in column [2] of *Table 12-1*, application of the City's threshold criteria to the "Existing with Project" scenario indicates that the Project is not expected to create significant impacts at any of the six study intersections located within the City South Gate. Incremental, but not significant, impacts are noted at the study intersections. Therefore, no mitigation measures are required or recommended with respect to these intersections under the "Existing with Project" conditions. The "Existing with Project" traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-1* and *9-2*, respectively.

12.2 Future Conditions

12.2.1 Future Cumulative Baseline Conditions

The future cumulative baseline conditions were forecast based on the addition of traffic generated by the completion and occupancy of the related projects, as well as the growth in traffic due to the combined effects of continuing development, intensification of existing developments and other factors (i.e., ambient growth). The delay values at all of the study intersections are incrementally increased with the addition of ambient traffic and traffic generated by the related projects listed in *Table 6-1*.

As presented in column [3] of *Table 12-1*, five of the six study intersections located within the City of South Gate are expected to operate at LOS C or better during the weekday AM and PM peak hours with the addition of growth in ambient traffic and related project traffic under the future cumulative baseline conditions. The following study intersection is expected to operate at LOS D during the peak hour shown below under future cumulative baseline conditions:

Table 12-1
SUMMARY OF DELAY VALUES
AND LEVELS OF SERVICE [A]
AM AND PM PEAK HOURS
CITY OF SOUTH GATE INTERSECTIONS

13/Dec/19

NO.	INTERSECTION	INTERSECTION TYPE	PEAK HOUR	[1]		[2]			[3]			[4]			
				YEAR 2019 EXISTING DELAY [B]	LOS [C]	YEAR 2019 EXISTING PROPOSED DELAY	LOS	CHANGE DELAY [(2)-(1)]	SIGNIF. IMPACT [D]	YEAR 2021 FUTURE DELAY [B]	LOS [C]	YEAR 2021 FUTURE PROPOSED DELAY	LOS	CHANGE DELAY [(4)-(3)]	SIGNIF. IMPACT [D]
3	California Avenue / Santa Ana Street	Signalized	AM PM	25.6 37.2	C D	28.6 38.3	C D	3.0 1.1	NO NO	27.1 41.1	C D	30.9 42.3	C D	3.8 1.2	NO NO
4	California Avenue / Independence Avenue	Signalized	AM PM	32.9 31.5	C C	33.0 31.5	C C	0.1 0.0	NO NO	33.2 31.7	C C	33.3 31.7	C C	0.1 0.0	NO NO
5	California Avenue / Ardmore Avenue	Signalized	AM PM	32.0 31.9	C C	32.3 31.9	C C	0.3 0.0	NO NO	32.4 32.3	C C	32.8 32.3	C C	0.4 0.0	NO NO
10	Otis Avenue - Otis Street / Santa Ana Street	Signalized	AM PM	20.0 21.1	C C	21.4 21.8	C C	1.4 0.7	NO NO	20.3 22.3	C C	21.9 23.2	C C	1.6 0.9	NO NO
11	Otis Street / Independence Avenue	Signalized	AM PM	31.8 33.3	C C	31.8 33.4	C C	0.0 0.1	NO NO	31.8 33.6	C C	31.9 33.7	C C	0.1 0.1	NO NO
12	Otis Street / Ardmore Avenue	Signalized	AM PM	32.9 33.2	C C	33.5 33.3	C C	0.6 0.1	NO NO	33.2 33.5	C C	34.0 33.7	C C	0.8 0.2	NO NO

[A] Intersection analysis based on the Highway Capacity Manual 2010 operational analysis methodologies, per the City of Cudahy.

[B] Control delay reported in seconds per vehicle.

[C] Signalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-20	B
> 20-35	C
> 35-55	D
> 55-80	E
> 80	F

Unsignalized Intersection Levels of Service were based on the following criteria:

Control Delay (s/veh)	LOS
<= 10	A
> 10-15	B
> 15-25	C
> 25-35	D
> 35-50	E
> 50	F

[D] A transportation impact on an intersection shall be deemed significant in accordance with the following criteria:

LOS	Commercial Corridor	Stop-Controlled
D	12 seconds	8 seconds
E	8 seconds	5 seconds
F	8 seconds	5 seconds

- Int. No. 3: California Avenue /
Santa Ana Street

PM Peak Hour: Delay = 41.1 sec., LOS D

The future cumulative baseline (existing, ambient growth and related projects) traffic volumes at the study intersections during the weekday AM and PM peak hours are presented in *Figures 9-3* and *9-4*, respectively.

12.2.2 *Future Cumulative with Project Conditions*

The “Future Cumulative with Project” conditions were forecast based on the addition of traffic generated by the Project plus completion and occupancy of related projects. As shown in column [4] of *Table 12-1*, application of the City’s threshold criteria to the “Future Cumulative with Project” scenario indicates that the proposed Project is not expected to create significant impacts at any of the six study intersections located within the City of South Gate. Therefore, no mitigation measures are required or recommended with respect to these intersections under the “Future Cumulative with Project” conditions. The “Future Cumulative with Project” (existing, ambient growth, related projects, and Project) traffic volumes at the study intersections during the weekday AM and PM peak hours are illustrated in *Figures 9-5* and *9-6*, respectively.

13.0 CONGESTION MANAGEMENT PROGRAM TRAFFIC IMPACT ASSESSMENT

The Congestion Management Program (CMP) is a state-mandated program that was enacted by the California State Legislature with the passage of Proposition 111 in 1990. The program is intended to address the impact of local growth on the regional transportation system.

As required by the 2010 Congestion Management Program for Los Angeles County, a Traffic Impact Assessment (TIA) has been prepared to determine the potential impacts on designated monitoring locations on the CMP highway system. The analysis has been prepared in accordance with procedures outlined in the *2010 Congestion Management Program for Los Angeles County*, County of Los Angeles Metropolitan Transportation Authority, 2010.

According to Section D.9.1 (Appendix D, page D-6) of the 2010 CMP manual, the criteria for determining a significant transportation impact is listed below:

“A significant transportation impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity ($V/C \geq 0.02$), causing or worsening LOS F ($V/C > 1.00$).”

The CMP impact criteria apply for analysis of both intersection and freeway monitoring locations.

13.1 Intersections

The following CMP intersection monitoring locations in the Project vicinity have been identified:

- | <u>CMP Station</u> | <u>Intersection</u> |
|--------------------|----------------------------------------------|
| No. 17 | Old Rivers School Road / Firestone Boulevard |
| No. 23 | Alameda Street / Slauson Avenue |
| No. 143 | Alameda Street / Firestone Boulevard |
| No. 144 | Atlantic Avenue / Firestone Boulevard |

The CMP TIA guidelines require that intersection monitoring locations must be examined if the proposed Project will add 50 or more trips during either the AM or PM weekday peak hours. As shown in *Figure 7-2* and *Figure 7-3*, the proposed Project would not add 50 or more trips during the AM or PM peak hours at any of the CMP monitoring locations. Therefore, no further review of potential impacts to intersection monitoring locations that are part of the CMP highway system is required.

13.2 Freeways

The following CMP freeway monitoring locations have been identified in the Project vicinity:

- | <u>CMP Station</u> | <u>Location</u> |
|--------------------|--------------------------------------------------------------------|
| No. 1080 | I-710 Freeway north of I-105 Freeway, north of Firestone Boulevard |

The CMP TIA guidelines require that freeway monitoring locations must be examined if the proposed Project will add 150 or more trips (in either direction) during either the AM or PM weekday peak periods. The proposed Project will not add 150 or more trips (in either direction) during either the AM or PM weekday peak hours to the CMP freeway monitoring locations which is the threshold for preparing a traffic impact assessment, as stated in the CMP manual. Therefore, no further review of potential impacts to freeway monitoring locations that are part of the CMP highway system is required.

13.3 Transit Impact Review

As required by the *2010 Congestion Management Program for Los Angeles County*, a review has been made of the potential impacts of the Project on transit service. As discussed in Subsection 4.4 herein, existing transit service is provided in the vicinity of the proposed Project.

The Project trip generation, as shown in *Table 7-1*, was adjusted by values set forth in the CMP (i.e., person trips equal 1.4 times vehicle trips, and transit trips equal 3.5 percent of the total person trips) to estimate transit trip generation. Pursuant to the CMP guidelines, the proposed Project is forecast to generate demand for 32 transit trips during the AM peak hour and eight transit trips during the PM peak hour. The calculations are as follows:

- AM Peak Hour = $647 \times 1.4 \times 0.035 = 32$ Transit Trips
- PM Peak Hour = $156 \times 1.4 \times 0.035 = 8$ Transit Trips

As shown in *Table 4-1*, eight transit lines and routes are provided adjacent to or in close proximity to the Project Site. As outlined in *Table 4-1*, under the “No. of Buses/Trains During Peak Hour” column, these eight public transit lines provide services for an average of (i.e., average of the directional number of buses/trains during the peak hours) generally 35 buses/trains during the AM peak hour and roughly 33 buses/trains during the PM peak hour. Therefore, based on the above calculated AM and PM peak hour trips, this would correspond to an insignificant number of additional Project-generated transit trips per bus/train. It is anticipated that the existing transit service in the Project area will adequately accommodate the increase of Project-generated transit trips.

14.0 VEHICLE MILES TRAVELED ASSESSMENT

14.1 Introduction

VMT is defined as a measurement of miles traveled by vehicles within a specified region and for a specified time period. VMT is a measure of the use and efficiency of the transportation network. VMT's are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (round-trip) travel and is often estimated for a typical weekday for the purposes of measuring transportation impacts.

In September 2013, the Governor's Office signed Senate Bill 743 (SB 743)⁴, starting a process that fundamentally changes the way transportation impact analysis is conducted under the California Environmental Quality Act. SB 743 requires jurisdictions within California to utilize VMT for purposes of evaluating the potential transportation impacts related to development projects in CEQA documents. VMT will replace the prior roadway capacity-based Level of Service type of analysis previously used by many jurisdictions in evaluating the effects of traffic related to a development project. The justification for this paradigm shift is that LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions.

Under SB 743, local jurisdictions are required to adopt a methodology and thresholds of significance related to VMT by July 2020. Based on discussions with the City of Cudahy, it is noted that the City has not yet adopted a methodology or thresholds of significance related to VMT. Therefore, this VMT assessment is presented for informational purposes.

14.2 Project VMT

Available census and VMT data provided by Caltrans⁵ was utilized for purposes of preparing this VMT assessment. Based on the Caltrans census and VMT data, the Project Site is within the Caltrans VMT Traffic Analysis Zone (TAZ) 4132. **Figure 14-1** presents the Caltrans VMT TAZ Map that shows the location of the Project Site within TAZ 4132. Details for the Caltrans VMT TAZ 4132 are shown below:

- VMT = 16,691
- Employees = 464
- Project VMT Per Employee = 35.97 (16,691/464)

As shown above, the existing per Employee VMT for the TAZ that the Project is located within is 35.97 miles per Employee.

⁴ <http://opr.ca.gov/ceqa/updates/sb-743/>

⁵ <https://dot.ca.gov/programs/transportation-planning/multi-modal-system-planning/statewide-modeling/sb-743-vmt-impact-assessment>

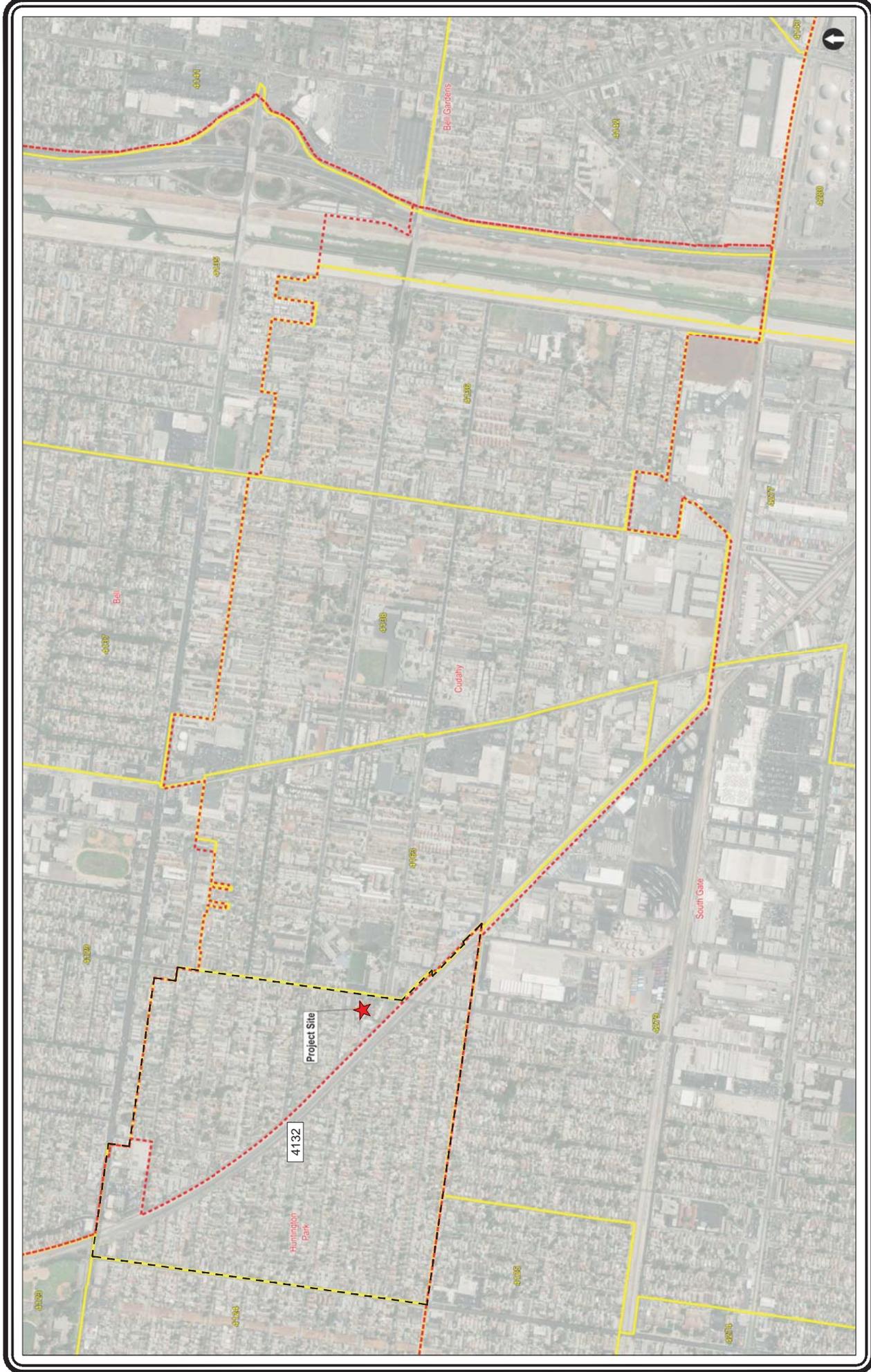


FIGURE 14-1
CALTRANS VMT TAZ MAP

MAP SOURCE: CALTRANS
 ★ PROJECT SITE
 [Red dashed line] CITY BOUNDARY
 [Yellow dashed line] TAZ 4132 BOUNDARY

 NOT TO SCALE

15.0 CONCLUSIONS

This traffic impact analysis has been prepared to evaluate the potential impacts to the local street system due to the proposed charter school project located at 7801-7835 Otis Avenue in the City of Cudahy. Twenty intersections were identified and analyzed in order to determine changes in operations following construction and occupancy of the proposed Project. Application of the impact threshold criteria consulted with the City of Cudahy indicate that none of the 20 study intersections would be significantly impacted by the forecast Project traffic. Incremental, but not significant, impacts are noted at the 20 study intersections evaluated in this analysis. As no significant impacts are expected due to the proposed Project, no traffic mitigation measures are required or recommended for the study intersections.

A VMT assessment has been prepared in accordance with SB 743 for informational purposes. Based on available census and VMT data provided by Caltrans, the Project VMT is determined to be 35.97 miles per Employee.

APPENDIX A
MANUAL TRAFFIC COUNT DATA

National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave/Salt Lake Ave & Florence Ave
 City: Huntington Park
 Control: Signalized

Project ID: 19-05618-001
 Date: 10/16/2019

Total

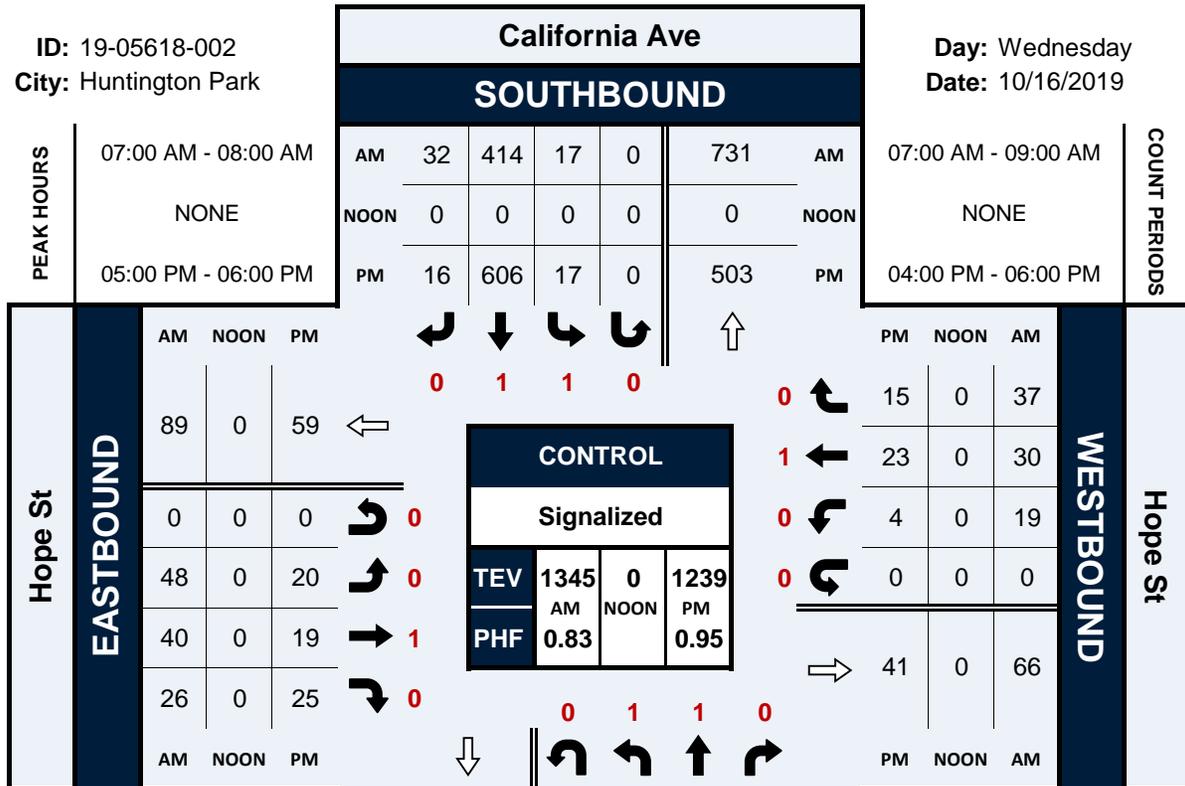
NS/EW Streets:	California Ave/Salt Lake Ave				California Ave/Salt Lake Ave				Florence Ave				Florence Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2.5 WT	0.5 WR	0 WU	
7:00 AM	42	106	55	0	24	57	14	0	4	187	16	0	26	261	37	0	829
7:15 AM	42	107	78	0	19	58	15	0	6	243	13	0	34	275	45	0	935
7:30 AM	42	133	70	0	25	63	25	0	14	225	28	0	45	248	47	0	965
7:45 AM	42	108	82	0	28	55	16	0	3	273	21	0	43	295	36	0	1002
8:00 AM	43	112	51	0	31	50	17	0	6	215	20	0	38	258	27	0	868
8:15 AM	35	91	69	0	25	50	13	0	6	208	19	0	28	238	32	0	814
8:30 AM	29	73	60	0	21	66	14	0	6	187	19	0	31	198	30	0	734
8:45 AM	28	58	37	0	16	54	14	0	8	186	23	0	27	223	30	0	704
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	303	788	502	0	189	453	128	0	53	1724	159	0	272	1996	284	0	6851
	19.02%	49.47%	31.51%	0.00%	24.55%	58.83%	16.62%	0.00%	2.74%	89.05%	8.21%	0.00%	10.66%	78.21%	11.13%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	169	460	281	0	103	226	73	0	29	956	82	0	160	1076	155	0	3770
PEAK HR FACTOR :	0.983	0.865	0.857	0.000	0.831	0.897	0.730	0.000	0.518	0.875	0.732	0.000	0.889	0.912	0.824	0.000	0.941
	0.929				0.889				0.898				0.930				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	2.5 WT	0.5 WR	0 WU	
4:00 PM	29	57	59	0	31	105	22	0	9	257	30	0	36	204	22	0	861
4:15 PM	27	54	46	0	32	102	18	0	9	274	41	0	35	185	21	0	844
4:30 PM	32	57	51	0	32	98	15	0	6	268	38	0	37	203	31	0	868
4:45 PM	26	52	50	0	28	86	17	0	4	270	35	0	44	190	19	0	821
5:00 PM	33	63	54	0	31	109	14	0	11	271	47	0	45	207	22	0	907
5:15 PM	30	61	44	0	25	94	22	0	10	272	40	0	45	220	17	0	880
5:30 PM	37	68	64	0	36	97	19	0	3	277	28	0	34	196	24	0	883
5:45 PM	33	62	58	0	31	106	18	0	14	249	41	0	53	198	24	0	887
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	247	474	426	0	246	797	145	0	66	2138	300	0	329	1603	180	0	6951
	21.53%	41.33%	37.14%	0.00%	20.71%	67.09%	12.21%	0.00%	2.64%	85.38%	11.98%	0.00%	15.58%	75.90%	8.52%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	133	254	220	0	123	406	73	0	38	1069	156	0	177	821	87	0	3557
PEAK HR FACTOR :	0.899	0.934	0.859	0.000	0.854	0.931	0.830	0.000	0.679	0.965	0.830	0.000	0.835	0.933	0.906	0.000	0.980
	0.898				0.971				0.960				0.962				

California Ave & Hope St

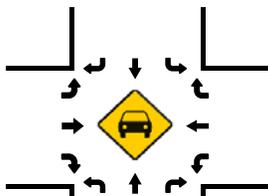
Peak Hour Turning Movement Count

ID: 19-05618-002
City: Huntington Park

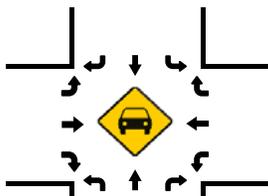
Day: Wednesday
Date: 10/16/2019



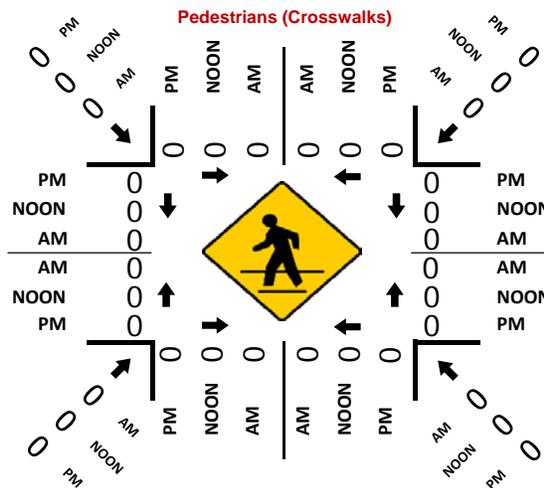
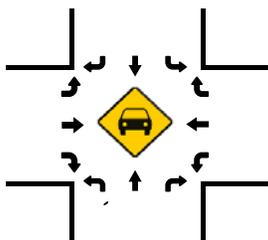
Total Vehicles (AM)



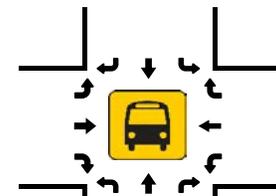
Total Vehicles (NOON)



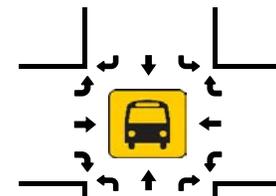
Total Vehicles (PM)



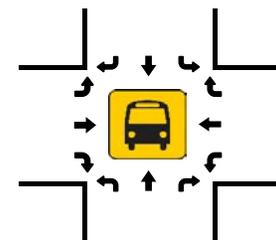
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave & Hope St
 City: Huntington Park
 Control: Signalized

Project ID: 19-05618-002
 Date: 10/16/2019

Total

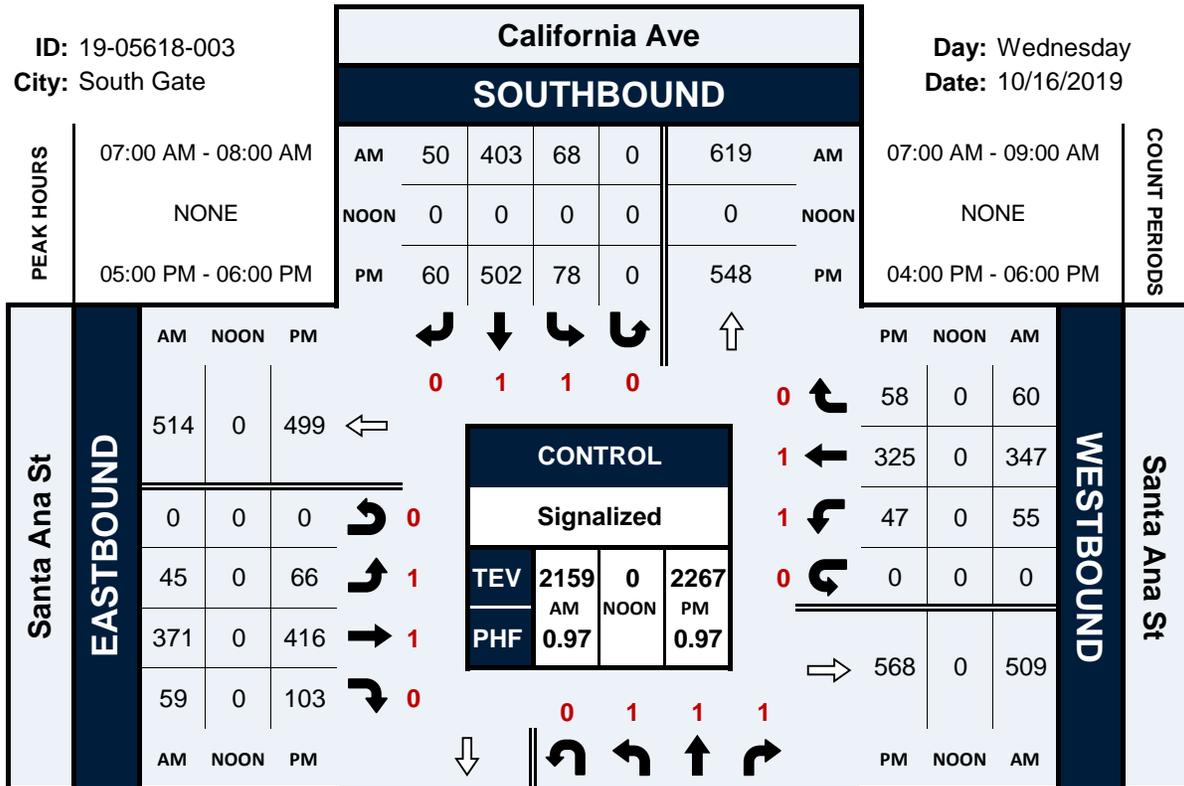
NS/EW Streets:	California Ave				California Ave				Hope St				Hope St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	7	162	1	0	3	81	6	0	4	5	4	0	4	7	9	0	293
7:15 AM	7	165	2	0	3	94	6	0	7	8	2	0	6	8	10	0	318
7:30 AM	5	155	0	0	4	100	10	0	15	11	8	0	2	10	9	0	329
7:45 AM	8	164	6	0	7	139	10	0	22	16	12	0	7	5	9	0	405
8:00 AM	1	132	2	0	3	70	1	0	2	2	4	0	1	1	2	0	221
8:15 AM	3	102	3	0	5	86	2	0	4	3	2	0	2	1	1	0	214
8:30 AM	1	109	1	0	3	111	2	0	4	2	4	0	4	2	4	0	247
8:45 AM	3	116	3	0	2	85	3	0	2	3	3	0	3	5	3	0	231
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	35	1105	18	0	30	766	40	0	60	50	39	0	29	39	47	0	2258
	3.02%	95.42%	1.55%	0.00%	3.59%	91.63%	4.78%	0.00%	40.27%	33.56%	26.17%	0.00%	25.22%	33.91%	40.87%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	27	646	9	0	17	414	32	0	48	40	26	0	19	30	37	0	1345
PEAK HR FACTOR :	0.844	0.979	0.375	0.000	0.607	0.745	0.800	0.000	0.545	0.625	0.542	0.000	0.679	0.750	0.925	0.000	0.830
	0.958				0.742				0.570				0.896				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	5	109	2	1	2	124	4	0	7	2	6	0	0	7	4	0	273
4:15 PM	4	92	2	0	4	136	4	0	11	3	11	0	5	4	2	0	278
4:30 PM	3	107	1	0	3	126	5	0	7	3	11	0	3	5	4	0	278
4:45 PM	3	115	1	0	4	135	4	0	7	6	6	0	0	4	1	0	286
5:00 PM	3	107	2	1	5	154	4	0	4	2	3	0	0	6	3	0	294
5:15 PM	1	115	1	0	4	151	4	0	4	4	3	0	0	6	3	0	296
5:30 PM	9	123	1	0	4	143	3	0	11	10	8	0	1	9	3	0	325
5:45 PM	7	123	1	0	4	158	5	0	1	3	11	0	3	2	6	0	324
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	35	891	11	2	30	1127	33	0	52	33	59	0	12	43	26	0	2354
	3.73%	94.89%	1.17%	0.21%	2.52%	94.71%	2.77%	0.00%	36.11%	22.92%	40.97%	0.00%	14.81%	53.09%	32.10%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	20	468	5	1	17	606	16	0	20	19	25	0	4	23	15	0	1239
PEAK HR FACTOR :	0.556	0.951	0.625	0.250	0.850	0.959	0.800	0.000	0.455	0.475	0.568	0.000	0.333	0.639	0.625	0.000	0.953
	0.929				0.957				0.552				0.808				

California Ave & Santa Ana St

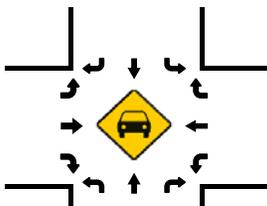
Peak Hour Turning Movement Count

ID: 19-05618-003
City: South Gate

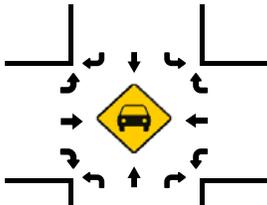
Day: Wednesday
Date: 10/16/2019



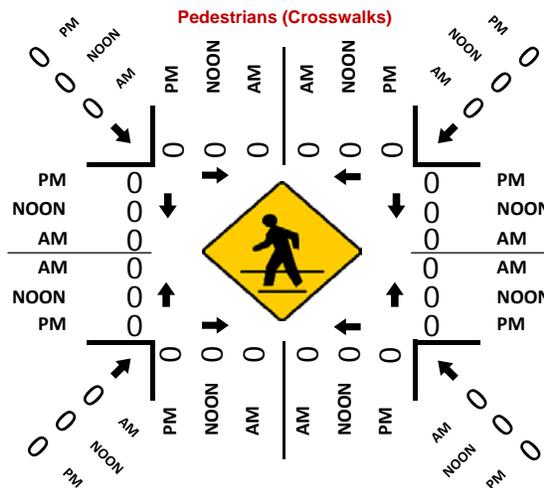
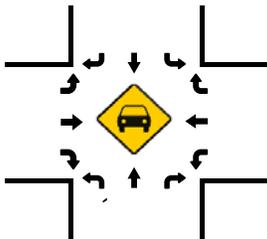
Total Vehicles (AM)



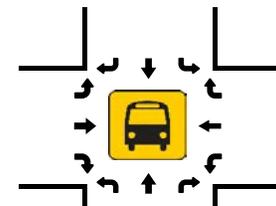
Total Vehicles (NOON)



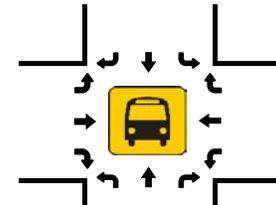
Total Vehicles (PM)



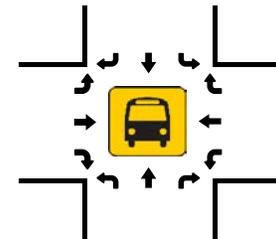
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave & Santa Ana St
 City: South Gate
 Control: Signalized

Project ID: 19-05618-003
 Date: 10/16/2019

Total

NS/EW Streets:		California Ave				California Ave				Santa Ana St				Santa Ana St				
		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
AM																		
	7:00 AM	37	114	18	0	18	92	5	0	11	107	12	0	7	85	5	0	511
	7:15 AM	35	132	11	0	12	100	12	0	8	89	16	0	14	98	17	0	544
	7:30 AM	23	124	24	0	24	103	17	0	18	75	17	0	20	84	21	0	550
	7:45 AM	22	144	17	0	14	108	16	0	8	100	14	0	14	80	17	0	554
	8:00 AM	26	130	16	0	18	66	18	0	18	81	10	0	16	75	7	0	481
	8:15 AM	22	90	13	0	11	85	11	0	11	77	13	0	12	62	7	0	414
	8:30 AM	20	95	15	0	17	77	13	0	11	65	13	0	13	60	6	0	405
	8:45 AM	18	74	13	0	9	64	14	0	8	69	12	0	8	60	10	0	359
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		203	903	127	0	123	695	106	0	93	663	107	0	104	604	90	0	3818
		16.46%	73.24%	10.30%	0.00%	13.31%	75.22%	11.47%	0.00%	10.78%	76.83%	12.40%	0.00%	13.03%	75.69%	11.28%	0.00%	
PEAK HR :		07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :		117	514	70	0	68	403	50	0	45	371	59	0	55	347	60	0	2159
PEAK HR FACTOR :		0.791	0.892	0.729	0.000	0.708	0.933	0.735	0.000	0.625	0.867	0.868	0.000	0.688	0.885	0.714	0.000	0.974
		0.958				0.905				0.913				0.895				
PM																		
	4:00 PM	26	102	20	0	14	110	11	0	14	89	23	0	10	90	8	0	517
	4:15 PM	15	94	13	0	17	88	12	0	10	108	24	0	15	93	7	0	496
	4:30 PM	24	105	19	0	14	120	12	0	7	93	24	0	13	88	14	0	533
	4:45 PM	33	107	19	0	17	109	11	0	16	106	33	0	12	99	5	0	567
	5:00 PM	32	99	21	0	17	125	20	0	15	99	28	0	15	78	12	0	561
	5:15 PM	31	107	13	0	27	123	12	0	19	118	21	0	12	88	14	0	585
	5:30 PM	29	110	17	0	17	123	13	0	17	85	20	0	7	82	14	0	534
	5:45 PM	22	108	23	0	17	131	15	0	15	114	34	0	13	77	18	0	587
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		212	832	145	0	140	929	106	0	113	812	207	0	97	695	92	0	4380
		17.83%	69.97%	12.20%	0.00%	11.91%	79.06%	9.02%	0.00%	9.98%	71.73%	18.29%	0.00%	10.97%	78.62%	10.41%	0.00%	
PEAK HR :		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :		114	424	74	0	78	502	60	0	66	416	103	0	47	325	58	0	2267
PEAK HR FACTOR :		0.891	0.964	0.804	0.000	0.722	0.958	0.750	0.000	0.868	0.881	0.757	0.000	0.783	0.923	0.806	0.000	0.966
		0.981				0.982				0.897				0.943				

National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave & Independence Ave
 City: South Gate
 Control: Signalized

Project ID: 19-05618-004
 Date: 10/16/2019

Total

NS/EW Streets:	California Ave				California Ave				Independence Ave				Independence Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	13	137	6	0	4	131	5	0	3	32	10	0	10	36	12	0	399
7:15 AM	37	140	8	0	8	117	3	0	9	41	13	0	15	39	11	0	441
7:30 AM	38	170	8	0	6	148	6	0	2	31	24	0	16	50	11	0	510
7:45 AM	21	146	5	0	4	158	4	0	12	47	25	0	28	32	3	0	485
8:00 AM	18	159	13	0	0	89	4	0	5	29	7	0	9	25	11	0	369
8:15 AM	8	122	11	0	2	109	1	0	4	20	7	0	11	18	8	0	321
8:30 AM	9	90	5	0	2	92	4	0	4	20	4	0	8	18	4	0	260
8:45 AM	12	94	4	0	1	91	5	0	2	14	7	0	5	16	7	0	258
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	156	1058	60	0	27	935	32	0	41	234	97	0	102	234	67	0	3043
	12.24%	83.05%	4.71%	0.00%	2.72%	94.06%	3.22%	0.00%	11.02%	62.90%	26.08%	0.00%	25.31%	58.06%	16.63%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	109	593	27	0	22	554	18	0	26	151	72	0	69	157	37	0	1835
PEAK HR FACTOR :	0.717	0.872	0.844	0.000	0.688	0.877	0.750	0.000	0.542	0.803	0.720	0.000	0.616	0.785	0.771	0.000	0.900
	0.844				0.895				0.741				0.854				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	11	121	6	0	0	134	1	0	8	20	3	0	5	24	4	0	337
4:15 PM	15	113	13	0	3	119	8	0	6	36	8	0	5	30	13	0	369
4:30 PM	10	129	5	0	5	122	3	0	7	40	6	0	5	23	7	0	362
4:45 PM	11	141	3	0	3	138	3	0	0	21	8	0	6	24	3	0	361
5:00 PM	13	127	10	0	3	150	7	0	8	32	7	0	7	37	9	0	410
5:15 PM	15	140	10	0	2	133	2	0	4	28	7	0	8	24	11	0	384
5:30 PM	14	141	5	0	3	135	2	0	8	31	11	0	6	31	6	0	393
5:45 PM	9	106	5	0	1	154	1	0	6	50	9	0	9	26	7	0	383
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	98	1018	57	0	20	1085	27	0	47	258	59	0	51	219	60	0	2999
	8.35%	86.79%	4.86%	0.00%	1.77%	95.85%	2.39%	0.00%	12.91%	70.88%	16.21%	0.00%	15.45%	66.36%	18.18%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	51	514	30	0	9	572	12	0	26	141	34	0	30	118	33	0	1570
PEAK HR FACTOR :	0.850	0.911	0.750	0.000	0.750	0.929	0.429	0.000	0.813	0.705	0.773	0.000	0.833	0.797	0.750	0.000	0.957
	0.902				0.927				0.773				0.854				

National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave & Ardmore Ave
 City: South Gate
 Control: Signalized

Project ID: 19-05618-005
 Date: 10/16/2019

Total

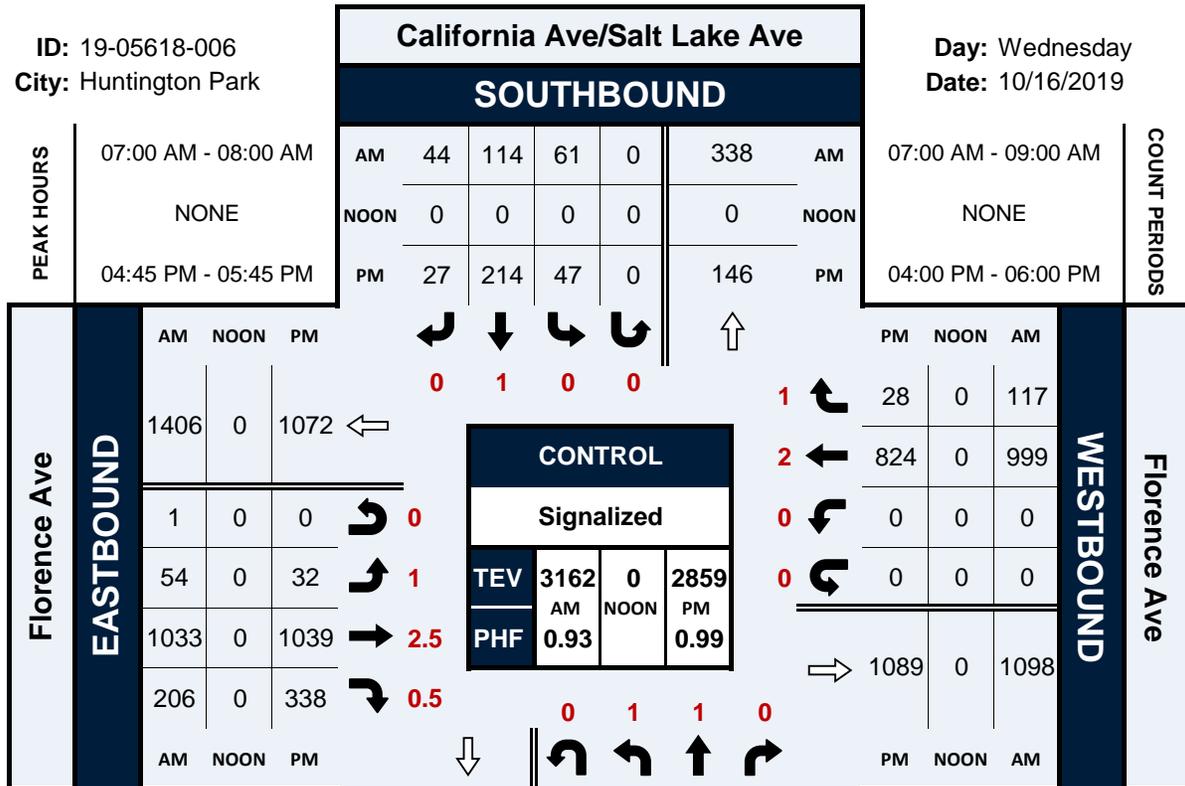
NS/EW Streets:	California Ave				California Ave				Ardmore Ave				Ardmore Ave				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	4	144	2	0	13	127	14	0	9	51	13	0	7	22	3	0	409
7:15 AM	7	172	5	0	9	122	11	0	6	77	26	0	4	31	7	0	477
7:30 AM	14	174	8	0	17	152	20	0	23	48	21	0	11	39	15	0	542
7:45 AM	10	141	5	0	8	171	31	0	24	51	40	0	19	44	11	0	555
8:00 AM	5	168	1	0	5	88	13	0	17	53	24	0	8	24	10	0	416
8:15 AM	5	124	4	0	8	110	8	0	5	26	13	0	5	19	5	0	332
8:30 AM	8	93	3	0	4	93	7	0	9	32	16	0	4	21	4	0	294
8:45 AM	6	100	5	0	7	87	9	0	6	27	6	0	1	13	4	0	271
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	59	1116	33	0	71	950	113	0	99	365	159	0	59	213	59	0	3296
	4.88%	92.38%	2.73%	0.00%	6.26%	83.77%	9.96%	0.00%	15.89%	58.59%	25.52%	0.00%	17.82%	64.35%	17.82%	0.00%	
PEAK HR	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	36	655	19	0	39	533	75	0	70	229	111	0	42	138	43	0	1990
PEAK HR FACTOR :	0.643	0.941	0.594	0.000	0.574	0.779	0.605	0.000	0.729	0.744	0.694	0.000	0.553	0.784	0.717	0.000	0.896
	0.906				0.770				0.891				0.753				
PM	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	6	118	12	0	9	126	5	0	8	38	21	0	0	15	6	0	364
4:15 PM	5	138	5	0	7	120	7	0	6	50	19	0	7	20	5	0	389
4:30 PM	4	128	7	0	8	113	8	0	9	52	23	0	6	18	5	0	381
4:45 PM	3	144	10	0	11	137	9	0	6	54	17	0	5	12	3	0	411
5:00 PM	4	134	9	0	6	149	8	0	14	41	20	0	4	27	4	0	420
5:15 PM	4	159	7	0	10	130	5	0	5	64	28	0	2	29	2	0	445
5:30 PM	7	145	10	0	17	132	9	0	6	49	13	0	7	21	8	0	424
5:45 PM	7	114	7	0	13	144	12	0	4	52	30	0	2	21	6	0	412
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	40	1080	67	0	81	1051	63	0	58	400	171	0	33	163	39	0	3246
	3.37%	90.99%	5.64%	0.00%	6.78%	87.95%	5.27%	0.00%	9.22%	63.59%	27.19%	0.00%	14.04%	69.36%	16.60%	0.00%	
PEAK HR	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	22	552	33	0	46	555	34	0	29	206	91	0	15	98	20	0	1701
PEAK HR FACTOR :	0.786	0.868	0.825	0.000	0.676	0.931	0.708	0.000	0.518	0.805	0.758	0.000	0.536	0.845	0.625	0.000	0.956
	0.893				0.939				0.840				0.924				

California Ave/Salt Lake Ave & Florence Ave

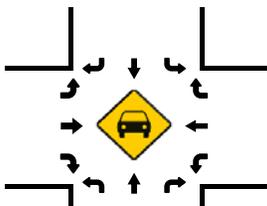
Peak Hour Turning Movement Count

ID: 19-05618-006
City: Huntington Park

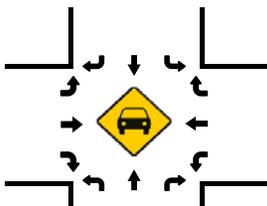
Day: Wednesday
Date: 10/16/2019



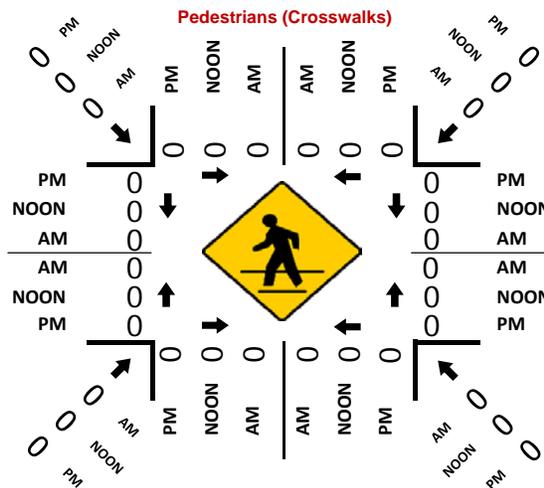
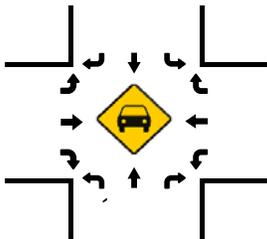
Total Vehicles (AM)



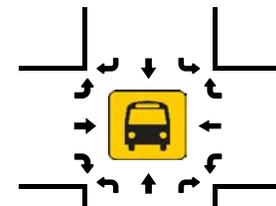
Total Vehicles (NOON)



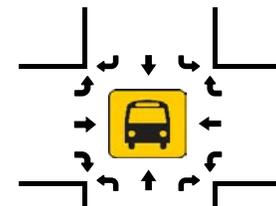
Total Vehicles (PM)



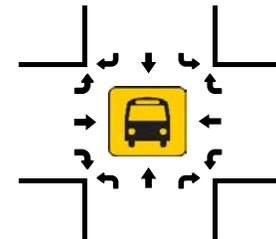
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: California Ave/Salt Lake Ave & Florence Ave
 City: Huntington Park
 Control: Signalized

Project ID: 19-05618-006
 Date: 10/16/2019

Total

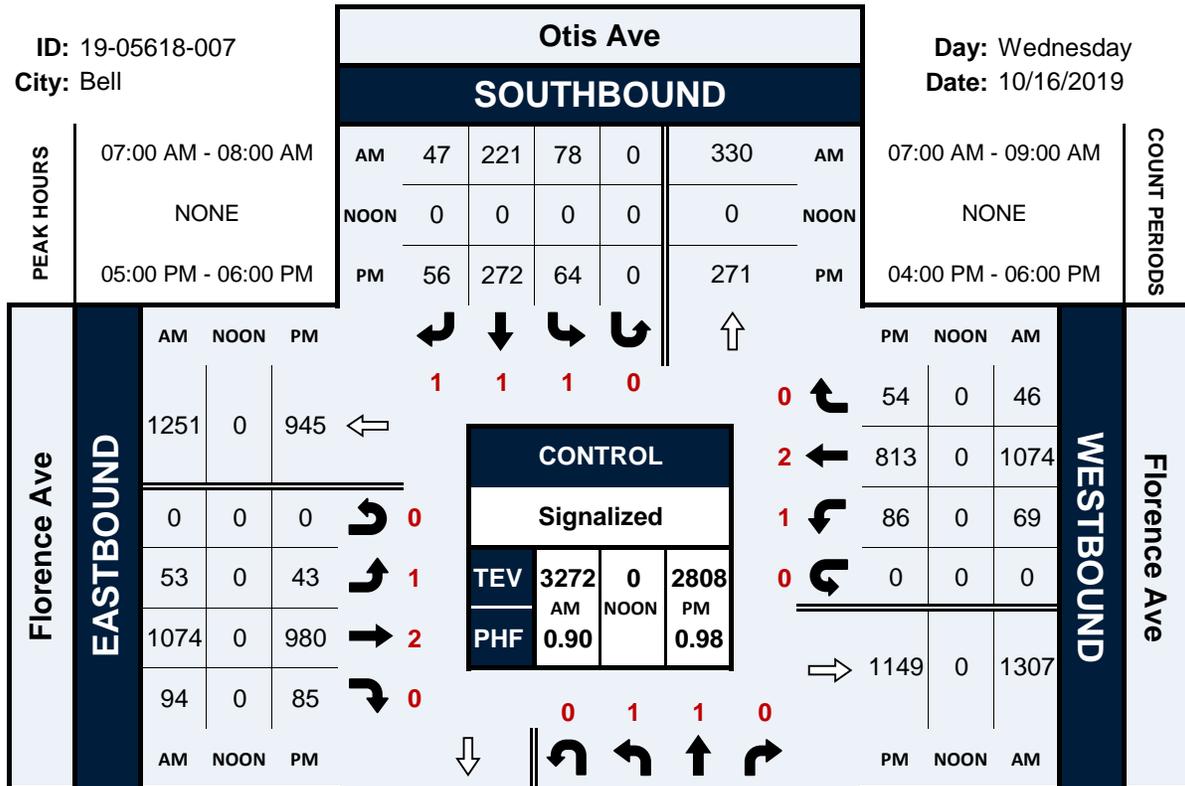
NS/EW Streets:	California Ave/Salt Lake Ave				California Ave/Salt Lake Ave				Florence Ave				Florence Ave					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	97	32	1	0	14	13	9	0	11	221	45	0	0	256	26	0	725	
7:15 AM	79	54	2	0	24	38	11	0	15	250	53	1	0	233	29	0	789	
7:30 AM	98	54	1	0	9	37	8	0	11	281	54	0	0	269	32	0	854	
7:45 AM	88	27	0	0	14	26	16	0	17	281	54	0	0	241	30	0	794	
8:00 AM	88	29	0	0	9	18	7	0	13	226	55	0	0	251	15	0	711	
8:15 AM	75	18	2	0	13	22	8	0	10	201	54	0	0	194	10	0	607	
8:30 AM	66	17	4	0	8	21	7	0	7	227	46	1	0	202	7	0	613	
8:45 AM	62	13	1	0	5	9	8	0	5	167	30	0	0	192	7	0	499	
TOTAL VOLUMES:	653	244	11	0	96	184	74	0	89	1854	391	2	0	1838	156	0	5592	
APPROACH %'s:	71.92%	26.87%	1.21%	0.00%	27.12%	51.98%	20.90%	0.00%	3.81%	79.37%	16.74%	0.09%	0.00%	92.18%	7.82%	0.00%		
PEAK HR:	07:00 AM - 08:00 AM																	TOTAL
PEAK HR VOL:	362	167	4	0	61	114	44	0	54	1033	206	1	0	999	117	0	3162	
PEAK HR FACTOR:	0.923	0.773	0.500	0.000	0.635	0.750	0.688	0.000	0.794	0.919	0.954	0.250	0.000	0.928	0.914	0.000	0.926	
	0.871				0.750				0.919				0.927					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	46	24	1	0	17	51	10	0	5	265	69	0	0	199	10	0	697	
4:15 PM	55	18	1	0	10	34	6	0	7	248	98	0	0	181	17	0	675	
4:30 PM	65	23	0	0	13	37	9	0	4	260	78	0	0	189	9	0	687	
4:45 PM	54	19	1	0	10	49	6	0	10	257	94	0	0	203	5	0	708	
5:00 PM	58	23	0	0	14	54	7	0	10	254	76	0	0	204	8	0	708	
5:15 PM	51	18	0	0	13	51	8	0	9	256	80	0	0	227	8	0	721	
5:30 PM	58	26	2	0	10	60	6	0	3	272	88	0	0	190	7	0	722	
5:45 PM	55	18	0	0	12	55	12	0	7	258	67	0	0	212	9	0	705	
TOTAL VOLUMES:	442	169	5	0	99	391	64	0	55	2070	650	0	0	1605	73	0	5623	
APPROACH %'s:	71.75%	27.44%	0.81%	0.00%	17.87%	70.58%	11.55%	0.00%	1.98%	74.59%	23.42%	0.00%	0.00%	95.65%	4.35%	0.00%		
PEAK HR:	04:45 PM - 05:45 PM																	TOTAL
PEAK HR VOL:	221	86	3	0	47	214	27	0	32	1039	338	0	0	824	28	0	2859	
PEAK HR FACTOR:	0.953	0.827	0.375	0.000	0.839	0.892	0.844	0.000	0.800	0.955	0.899	0.000	0.000	0.907	0.875	0.000	0.990	
	0.901				0.947				0.970				0.906					

Otis Ave & Florence Ave

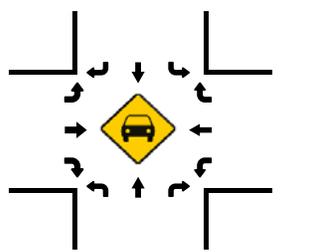
Peak Hour Turning Movement Count

ID: 19-05618-007
City: Bell

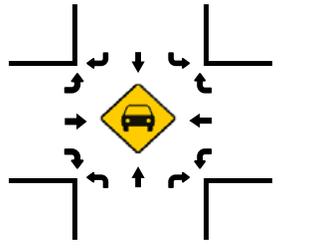
Day: Wednesday
Date: 10/16/2019



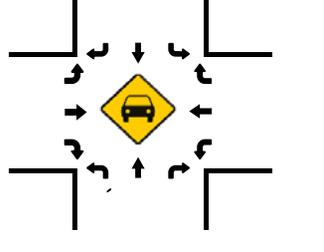
Total Vehicles (AM)



Total Vehicles (NOON)



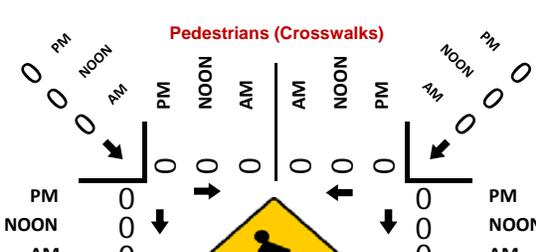
Total Vehicles (PM)



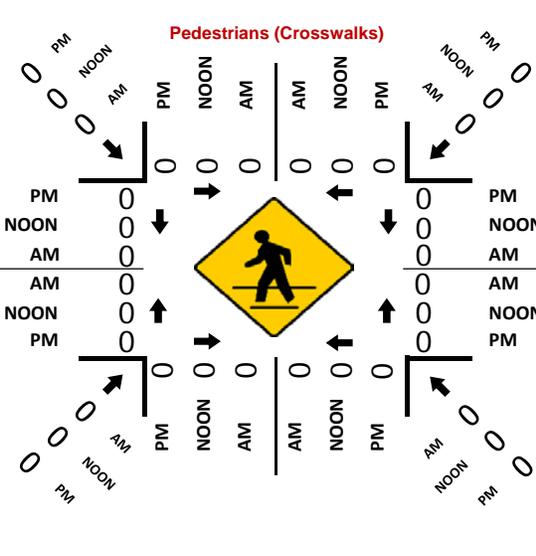
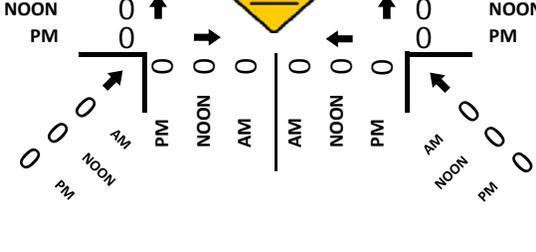
Total Vehicles (AM)



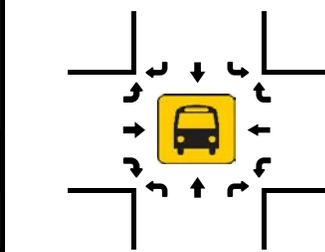
Total Vehicles (NOON)



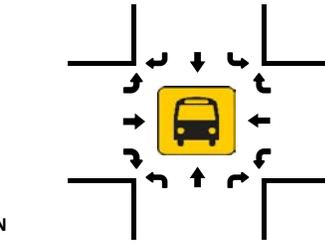
Total Vehicles (PM)



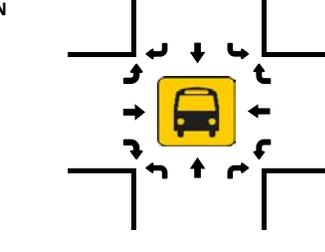
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Florence Ave
 City: Bell
 Control: Signalized

Project ID: 19-05618-007
 Date: 10/16/2019

Total

NS/EW Streets:	Otis Ave				Otis Ave				Florence Ave				Florence Ave				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	1	0	0	1	1	1	0	1	2	0	0	1	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	39	58	43	0	24	31	10	0	5	200	17	0	18	243	9	0	697
7:15 AM	35	54	37	0	20	43	12	0	19	303	24	0	19	329	16	0	911
7:30 AM	28	62	35	0	21	79	10	0	11	264	21	0	12	264	15	0	822
7:45 AM	28	57	40	0	13	68	15	0	18	307	32	0	20	238	6	0	842
8:00 AM	20	51	30	0	15	51	12	0	12	217	11	0	14	208	16	0	657
8:15 AM	14	41	21	0	18	31	8	0	10	215	13	0	5	223	7	0	606
8:30 AM	14	28	26	0	19	29	4	0	5	206	11	0	15	185	10	0	552
8:45 AM	12	29	20	0	9	26	5	0	7	177	12	0	13	231	6	0	547
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	190	380	252	0	139	358	76	0	87	1889	141	0	116	1921	85	0	5634
APPROACH %'s :	23.11%	46.23%	30.66%	0.00%	24.26%	62.48%	13.26%	0.00%	4.11%	89.23%	6.66%	0.00%	5.47%	90.53%	4.01%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	130	231	155	0	78	221	47	0	53	1074	94	0	69	1074	46	0	3272
PEAK HR FACTOR :	0.833	0.931	0.901	0.000	0.813	0.699	0.783	0.000	0.697	0.875	0.734	0.000	0.863	0.816	0.719	0.000	0.898
	0.921				0.786				0.855				0.817				
PM	1	1	0	0	1	1	1	0	1	2	0	0	1	2	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	15	38	19	0	13	68	13	0	11	257	25	0	23	216	12	0	710
4:15 PM	17	45	19	0	13	62	8	0	7	234	21	0	23	189	10	0	648
4:30 PM	15	51	14	0	24	72	7	0	7	252	21	0	16	220	15	0	714
4:45 PM	13	48	17	0	18	69	13	0	9	238	18	0	21	203	17	0	684
5:00 PM	17	45	22	0	20	75	11	0	13	239	26	0	17	218	13	0	716
5:15 PM	19	47	28	0	22	63	17	0	8	242	12	0	17	185	16	0	676
5:30 PM	13	41	20	0	11	62	14	0	11	255	24	0	23	210	14	0	698
5:45 PM	27	41	35	0	11	72	14	0	11	244	23	0	29	200	11	0	718
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	136	356	174	0	132	543	97	0	77	1961	170	0	169	1641	108	0	5564
APPROACH %'s :	20.42%	53.45%	26.13%	0.00%	17.10%	70.34%	12.56%	0.00%	3.49%	88.81%	7.70%	0.00%	8.81%	85.56%	5.63%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	76	174	105	0	64	272	56	0	43	980	85	0	86	813	54	0	2808
PEAK HR FACTOR :	0.704	0.926	0.750	0.000	0.727	0.907	0.824	0.000	0.827	0.961	0.817	0.000	0.741	0.932	0.844	0.000	0.978
	0.862				0.925				0.955				0.961				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Live Oak St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-008
 Date: 10/16/2019

Total

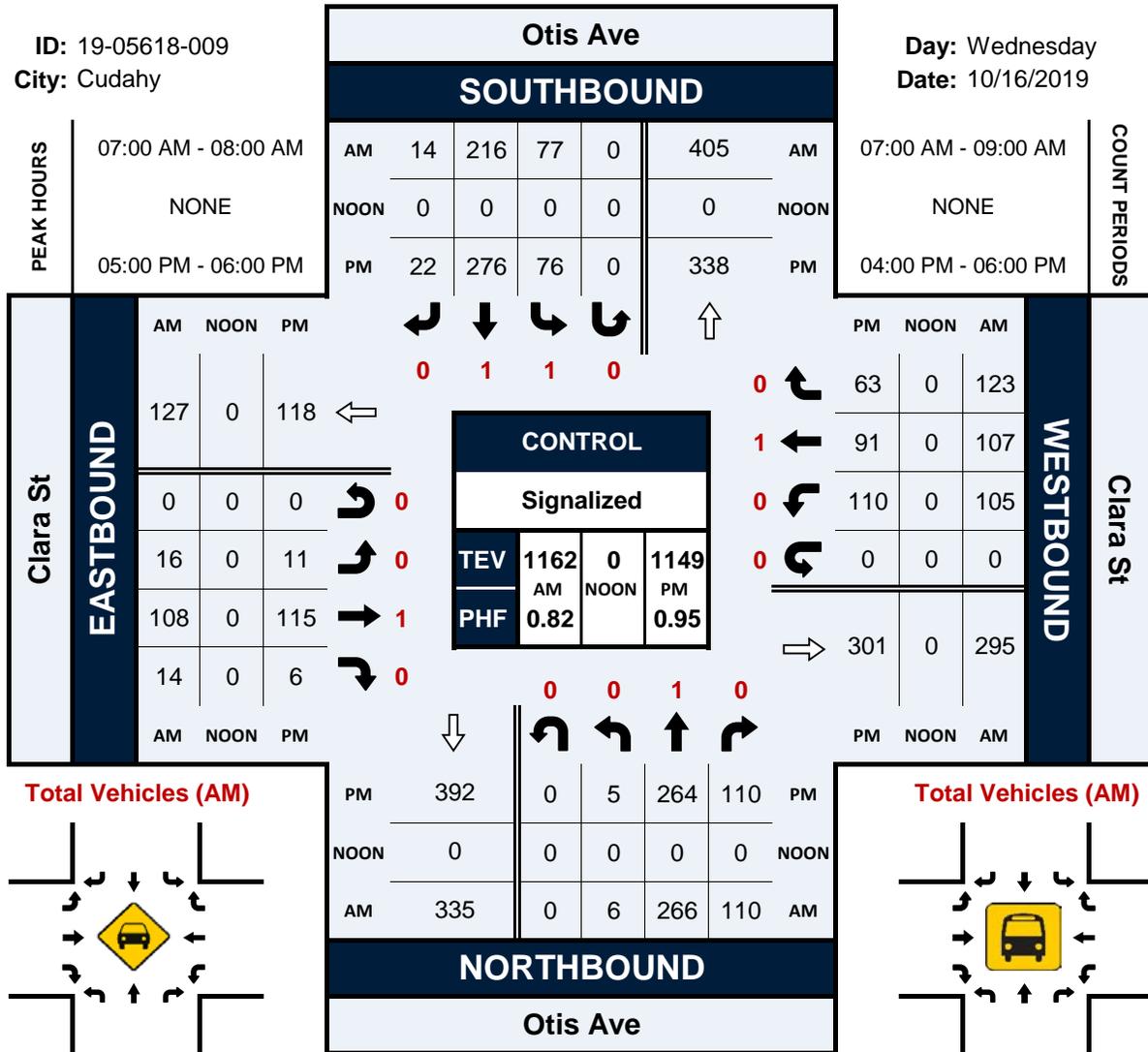
NS/EW Streets:	Otis Ave				Otis Ave				Live Oak St				Live Oak St					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	6	103	13	0	8	56	4	0	7	4	5	0	4	12	12	0	234	
7:15 AM	7	110	10	0	17	62	4	0	8	13	6	0	6	10	13	0	266	
7:30 AM	6	82	11	0	19	97	5	0	5	21	11	0	13	16	25	0	311	
7:45 AM	9	101	13	0	23	93	5	0	6	22	8	0	12	18	32	0	342	
8:00 AM	6	70	14	0	10	58	4	0	1	12	7	0	10	12	11	0	215	
8:15 AM	2	64	9	0	6	39	1	0	1	7	6	0	8	8	12	0	163	
8:30 AM	3	49	6	0	2	55	1	0	2	9	3	0	3	12	1	0	146	
8:45 AM	2	55	10	0	3	45	1	0	6	9	3	0	7	6	3	0	150	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	41	634	86	0	88	505	25	0	36	97	49	0	63	94	109	0	1827	
	5.39%	83.31%	11.30%	0.00%	14.24%	81.72%	4.05%	0.00%	19.78%	53.30%	26.92%	0.00%	23.68%	35.34%	40.98%	0.00%		
PEAK HR :	07:00 AM - 08:00 AM																	TOTAL
PEAK HR VOL :	28	396	47	0	67	308	18	0	26	60	30	0	35	56	82	0	1153	
PEAK HR FACTOR :	0.778	0.900	0.904	0.000	0.728	0.794	0.900	0.000	0.813	0.682	0.682	0.000	0.673	0.778	0.641	0.000	0.843	
	0.927				0.812				0.784				0.698					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	4	60	16	0	8	94	3	0	0	16	8	0	13	10	10	0	242	
4:15 PM	4	68	10	0	8	80	4	0	2	13	1	0	8	9	9	0	216	
4:30 PM	8	70	14	0	11	76	9	0	2	13	5	0	6	8	10	0	232	
4:45 PM	5	57	15	0	5	81	2	0	1	15	5	0	6	13	15	0	220	
5:00 PM	4	68	7	0	10	96	3	0	5	12	5	0	8	11	13	0	242	
5:15 PM	5	84	10	0	10	71	4	0	0	12	4	0	9	11	4	0	224	
5:30 PM	9	61	17	0	14	79	8	0	4	9	7	0	8	7	10	0	233	
5:45 PM	2	81	9	0	15	80	7	0	4	24	2	0	12	13	18	0	267	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
APPROACH %'s :	41	549	98	0	81	657	40	0	18	114	37	0	70	82	89	0	1876	
	5.96%	79.80%	14.24%	0.00%	10.41%	84.45%	5.14%	0.00%	10.65%	67.46%	21.89%	0.00%	29.05%	34.02%	36.93%	0.00%		
PEAK HR :	05:00 PM - 06:00 PM																	TOTAL
PEAK HR VOL :	20	294	43	0	49	326	22	0	13	57	18	0	37	42	45	0	966	
PEAK HR FACTOR :	0.556	0.875	0.632	0.000	0.817	0.849	0.688	0.000	0.650	0.594	0.643	0.000	0.771	0.808	0.625	0.000	0.904	
	0.902				0.911				0.733				0.721					

Otis Ave & Clara St

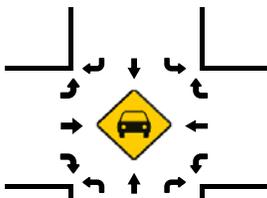
Peak Hour Turning Movement Count

ID: 19-05618-009
City: Cudahy

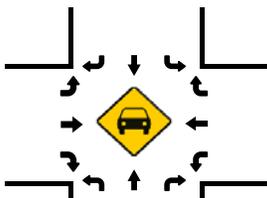
Day: Wednesday
Date: 10/16/2019



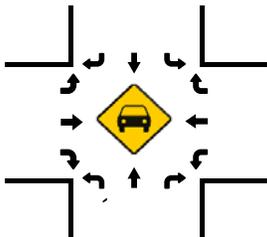
Total Vehicles (AM)



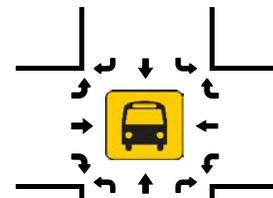
Total Vehicles (NOON)



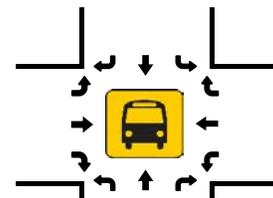
Total Vehicles (PM)



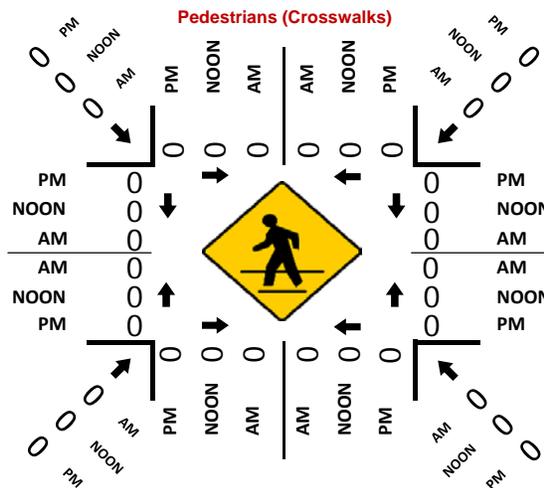
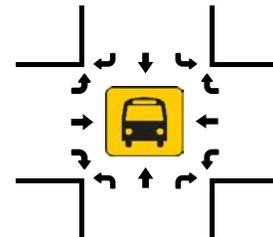
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Clara St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-009
 Date: 10/16/2019

Total

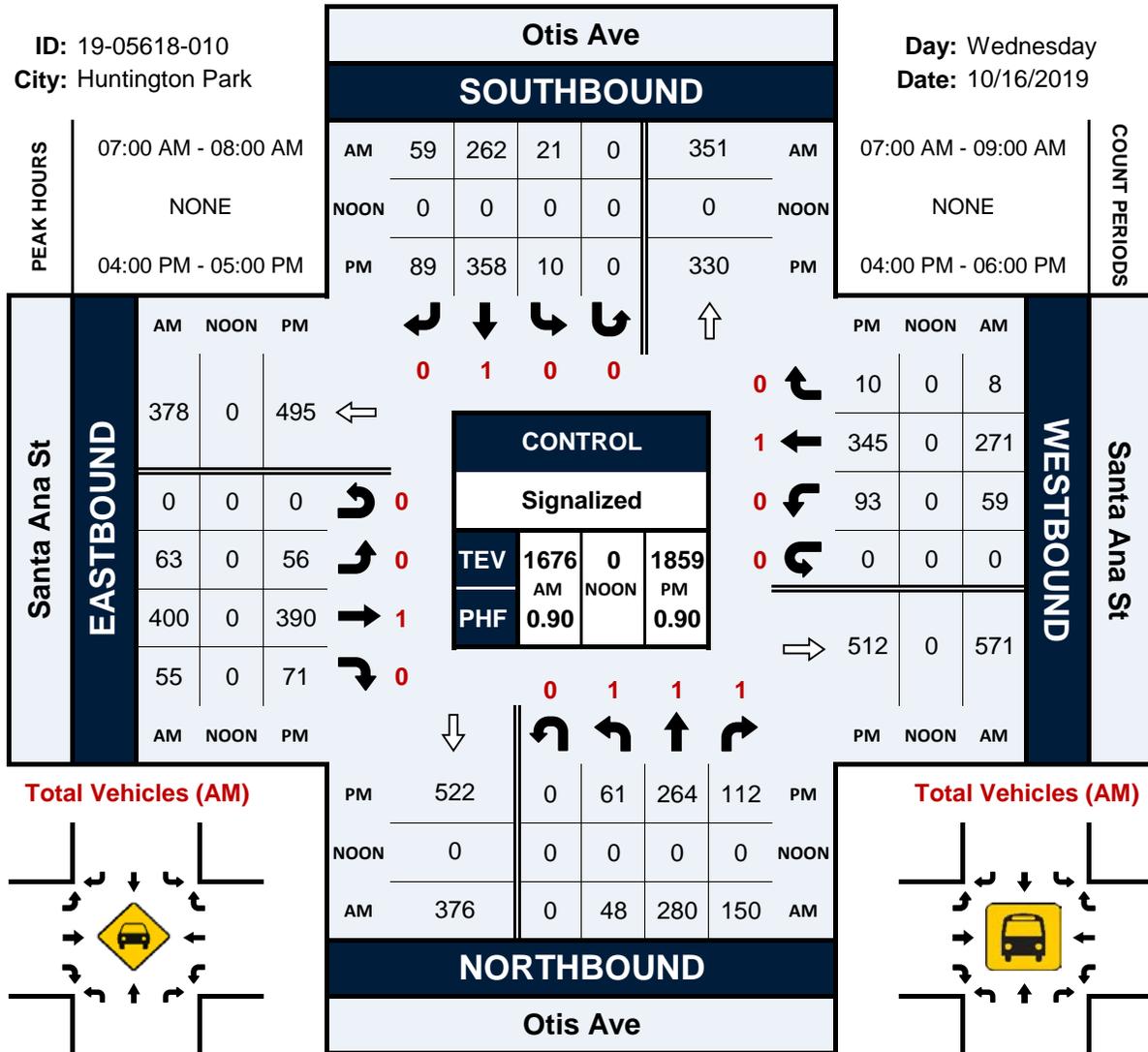
NS/EW Streets:	Otis Ave				Otis Ave				Clara St				Clara St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	4	80	21	0	16	40	1	0	3	21	1	0	15	19	24	0	245
7:15 AM	1	76	30	0	13	47	3	0	4	22	5	0	22	17	24	0	264
7:30 AM	0	45	35	0	26	53	8	0	3	35	5	0	28	30	29	0	297
7:45 AM	1	65	24	0	22	76	2	0	6	30	3	0	40	41	46	0	356
8:00 AM	0	63	15	0	9	61	3	0	0	20	5	0	18	26	16	0	236
8:15 AM	0	60	21	0	4	50	0	0	2	16	1	0	17	24	13	0	208
8:30 AM	1	40	17	0	11	48	3	0	2	14	1	0	16	21	5	0	179
8:45 AM	0	54	19	0	8	46	2	0	3	5	1	0	20	18	13	0	189
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	7	483	182	0	109	421	22	0	23	163	22	0	176	196	170	0	1974
APPROACH %'s :	1.04%	71.88%	27.08%	0.00%	19.75%	76.27%	3.99%	0.00%	11.06%	78.37%	10.58%	0.00%	32.47%	36.16%	31.37%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	6	266	110	0	77	216	14	0	16	108	14	0	105	107	123	0	1162
PEAK HR FACTOR :	0.375	0.831	0.786	0.000	0.740	0.711	0.438	0.000	0.667	0.771	0.700	0.000	0.656	0.652	0.668	0.000	0.816
	0.893				0.768				0.802				0.659				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	2	67	21	0	24	65	4	0	1	28	2	0	22	21	12	0	269
4:15 PM	0	53	13	0	11	71	2	0	1	28	0	0	28	21	20	0	248
4:30 PM	2	74	27	0	13	60	3	0	1	18	3	0	28	14	18	0	261
4:45 PM	1	58	17	0	12	72	1	0	1	25	2	0	21	17	18	0	245
5:00 PM	0	59	31	0	15	78	8	0	1	24	3	0	23	21	9	0	272
5:15 PM	3	69	23	0	21	66	7	0	4	32	2	0	26	15	11	0	279
5:30 PM	0	67	23	0	20	65	3	0	3	36	0	0	31	26	21	0	295
5:45 PM	2	69	33	0	20	67	4	0	3	23	1	0	30	29	22	0	303
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
	10	516	188	0	136	544	32	0	15	214	13	0	209	164	131	0	2172
APPROACH %'s :	1.40%	72.27%	26.33%	0.00%	19.10%	76.40%	4.49%	0.00%	6.20%	88.43%	5.37%	0.00%	41.47%	32.54%	25.99%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	5	264	110	0	76	276	22	0	11	115	6	0	110	91	63	0	1149
PEAK HR FACTOR :	0.417	0.957	0.833	0.000	0.905	0.885	0.688	0.000	0.688	0.799	0.500	0.000	0.887	0.784	0.716	0.000	0.948
	0.911				0.926				0.846				0.815				

Otis Ave & Santa Ana St

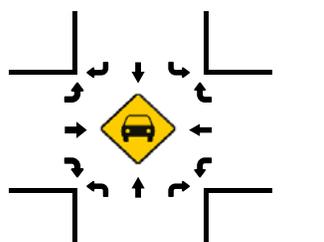
Peak Hour Turning Movement Count

ID: 19-05618-010
City: Huntington Park

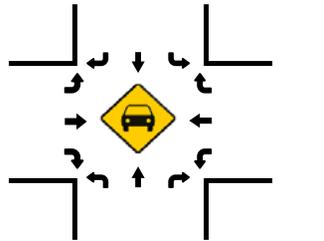
Day: Wednesday
Date: 10/16/2019



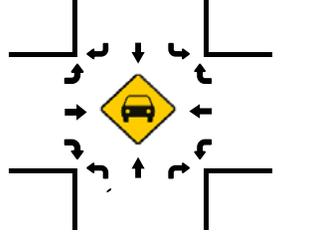
Total Vehicles (AM)



Total Vehicles (NOON)



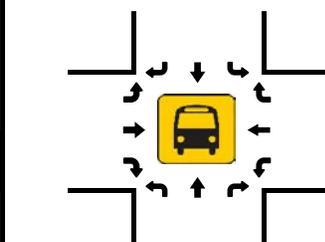
Total Vehicles (PM)



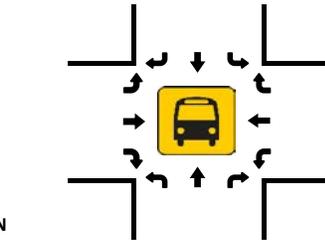
AM	522	0	61	264	112
NOON	0	0	0	0	0
PM	376	0	48	280	150

OTIS AVE NORTHBOUND

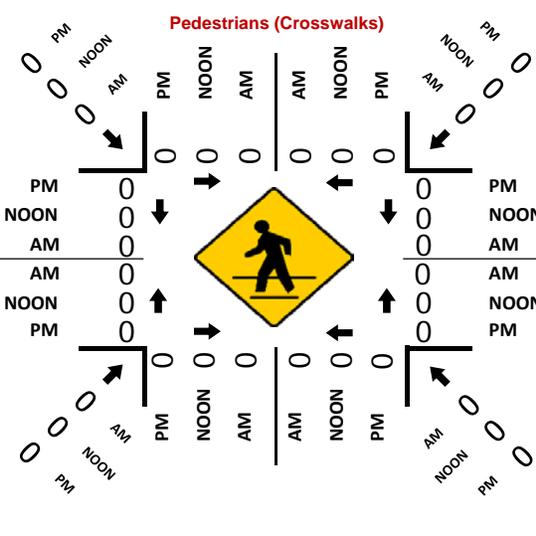
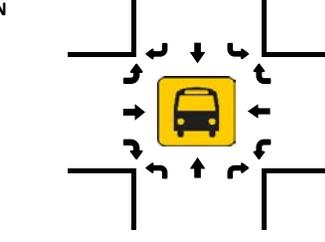
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Santa Ana St
 City: Huntington Park
 Control: Signalized

Project ID: 19-05618-010
 Date: 10/16/2019

Total

NS/EW Streets:	Otis Ave				Otis Ave				Santa Ana St				Santa Ana St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
7:00 AM	11	66	43	0	7	75	13	0	17	115	11	0	13	90	2	0	463
7:15 AM	19	82	46	0	2	72	23	0	24	92	16	0	17	69	1	0	463
7:30 AM	11	69	39	0	6	69	11	0	9	100	21	0	16	59	1	0	411
7:45 AM	7	63	22	0	6	46	12	0	13	93	7	0	13	53	4	0	339
8:00 AM	14	62	23	0	4	58	19	0	10	78	9	0	10	52	5	0	344
8:15 AM	15	59	26	0	4	53	20	0	17	75	15	0	8	54	3	0	349
8:30 AM	9	42	17	0	2	54	21	0	13	62	11	0	12	50	2	0	295
8:45 AM	13	45	19	0	1	40	14	0	10	80	10	0	8	49	2	0	291
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	99	488	235	0	32	467	133	0	113	695	100	0	97	476	20	0	2955
	12.04%	59.37%	28.59%	0.00%	5.06%	73.89%	21.04%	0.00%	12.44%	76.54%	11.01%	0.00%	16.36%	80.27%	3.37%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	48	280	150	0	21	262	59	0	63	400	55	0	59	271	8	0	1676
PEAK HR FACTOR :	0.632	0.854	0.815	0.000	0.750	0.873	0.641	0.000	0.656	0.870	0.655	0.000	0.868	0.753	0.500	0.000	0.905
	0.813				0.881				0.906				0.805				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	0 SL	1 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	1 WT	0 WR	0 WU	
4:00 PM	20	65	36	0	1	88	27	0	13	91	12	0	17	89	1	0	460
4:15 PM	16	51	25	0	2	73	25	0	14	94	17	0	30	88	4	0	439
4:30 PM	13	77	34	0	4	97	16	0	15	109	27	0	24	97	2	0	515
4:45 PM	12	71	17	0	3	100	21	0	14	96	15	0	22	71	3	0	445
5:00 PM	18	60	32	0	4	76	20	0	19	89	14	0	13	89	1	0	435
5:15 PM	19	62	34	0	3	73	20	0	22	97	13	0	11	101	3	0	458
5:30 PM	23	66	26	0	1	93	22	0	12	103	18	0	10	113	4	0	491
5:45 PM	19	71	39	0	2	80	15	0	23	103	15	0	22	83	0	0	472
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	140	523	243	0	20	680	166	0	132	782	131	0	149	731	18	0	3715
	15.45%	57.73%	26.82%	0.00%	2.31%	78.52%	19.17%	0.00%	12.63%	74.83%	12.54%	0.00%	16.59%	81.40%	2.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	61	264	112	0	10	358	89	0	56	390	71	0	93	345	10	0	1859
PEAK HR FACTOR :	0.763	0.857	0.778	0.000	0.625	0.895	0.824	0.000	0.933	0.894	0.657	0.000	0.775	0.889	0.625	0.000	0.902
	0.881				0.921				0.856				0.911				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Independence Ave
 City: South Gate
 Control: Signalized

Project ID: 19-05618-011
 Date: 10/16/2019

Total

NS/EW Streets:	Otis Ave				Otis Ave				Independence Ave				Independence Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	28	117	10	0	11	103	6	0	5	21	32	0	5	8	1	0	347
7:15 AM	30	136	14	0	10	114	7	0	6	36	29	0	10	5	0	0	397
7:30 AM	35	122	32	0	16	102	10	0	8	27	27	0	7	9	2	0	397
7:45 AM	22	128	22	0	12	112	8	0	11	23	32	0	11	6	4	0	391
8:00 AM	20	127	16	0	2	117	6	0	7	16	23	0	5	8	3	0	350
8:15 AM	24	82	6	0	7	78	8	0	7	11	17	0	11	4	2	0	257
8:30 AM	10	89	4	0	1	72	5	0	7	15	14	0	9	5	0	0	231
8:45 AM	18	81	15	0	1	88	7	0	4	10	5	0	9	7	3	0	248
TOTAL VOLUMES :	187	882	119	0	60	786	57	0	55	159	179	0	67	52	15	0	2618
APPROACH %'s :	15.74%	74.24%	10.02%	0.00%	6.64%	87.04%	6.31%	0.00%	13.99%	40.46%	45.55%	0.00%	50.00%	38.81%	11.19%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	107	513	84	0	40	445	31	0	32	102	111	0	33	28	9	0	1535
PEAK HR FACTOR :	0.764	0.943	0.656	0.000	0.625	0.951	0.775	0.000	0.727	0.708	0.867	0.000	0.750	0.778	0.563	0.000	0.967
	0.931				0.977				0.863				0.833				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	1	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	32	108	7	0	2	112	8	0	4	6	11	0	11	10	4	0	315
4:15 PM	39	102	6	0	3	104	4	0	10	16	16	0	16	10	1	0	327
4:30 PM	25	133	9	0	4	122	3	0	3	12	20	0	11	13	2	0	357
4:45 PM	22	113	21	0	4	135	6	0	5	8	13	1	17	19	7	0	371
5:00 PM	37	127	12	0	2	114	6	0	9	17	15	0	17	17	2	0	375
5:15 PM	27	114	5	0	8	135	9	0	3	13	12	0	11	10	3	0	350
5:30 PM	36	120	10	0	5	121	7	0	5	12	24	0	8	11	4	0	363
5:45 PM	31	112	9	0	2	109	7	0	9	17	22	0	11	14	1	0	344
TOTAL VOLUMES :	249	929	79	0	30	952	50	0	48	101	133	1	102	104	24	0	2802
APPROACH %'s :	19.81%	73.91%	6.28%	0.00%	2.91%	92.25%	4.84%	0.00%	16.96%	35.69%	47.00%	0.35%	44.35%	45.22%	10.43%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	122	474	48	0	19	505	28	0	22	50	64	1	53	57	16	0	1459
PEAK HR FACTOR :	0.824	0.933	0.571	0.000	0.594	0.935	0.778	0.000	0.611	0.735	0.667	0.250	0.779	0.750	0.571	0.000	0.973
	0.915				0.908				0.835				0.733				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Ardmore Ave
 City: South Gate
 Control: Signalized

Project ID: 19-05618-012
 Date: 10/16/2019

Total

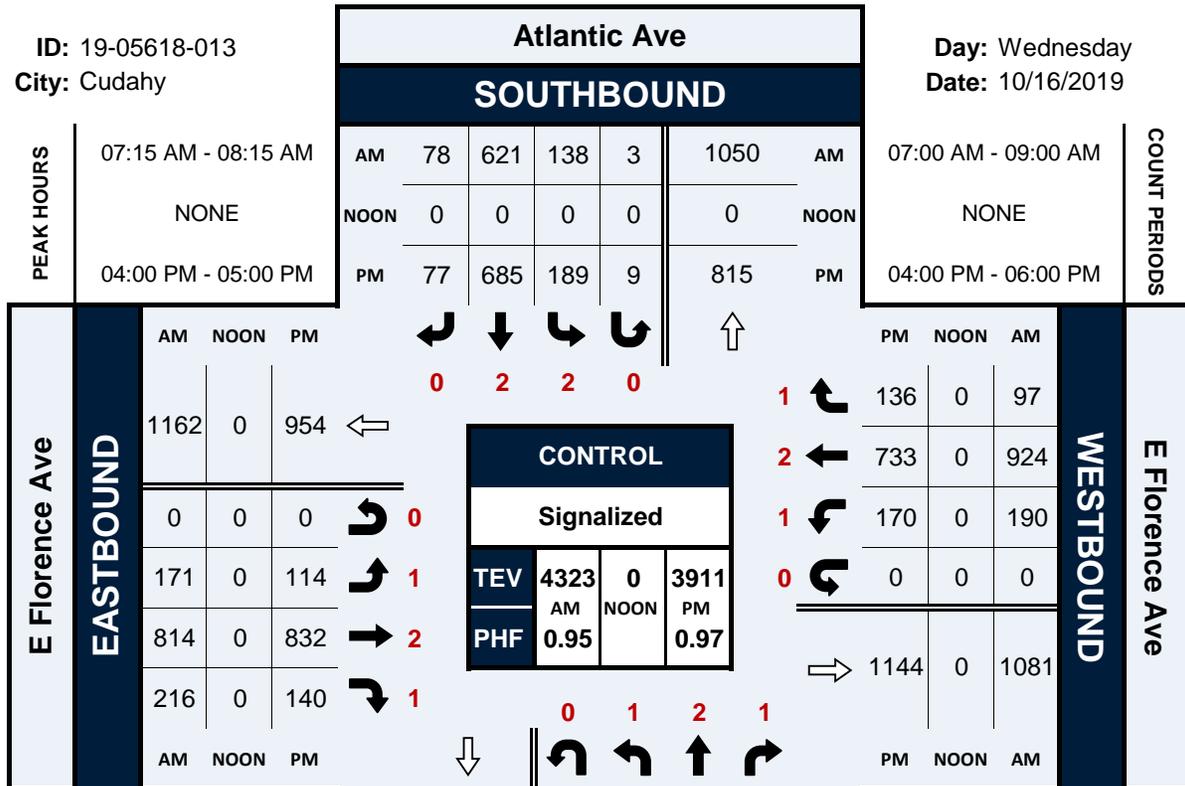
NS/EW Streets:	Otis Ave				Otis Ave				Ardmore Ave				Ardmore Ave				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	13	142	0	0	0	132	8	0	14	0	72	0	0	0	0	0	381
7:15 AM	28	155	2	0	0	147	8	0	24	2	88	0	0	0	0	0	454
7:30 AM	23	156	2	0	1	120	13	0	31	2	59	0	2	1	0	0	410
7:45 AM	16	155	1	0	1	130	24	0	22	1	56	0	1	1	1	0	409
8:00 AM	14	135	2	0	0	137	8	0	23	0	58	0	0	0	1	0	378
8:15 AM	15	97	1	0	1	101	4	0	15	0	26	0	0	0	0	0	260
8:30 AM	12	95	2	0	0	86	8	0	14	0	41	0	1	1	0	0	260
8:45 AM	7	98	1	0	0	97	6	0	10	2	36	0	0	1	0	0	258
TOTAL VOLUMES :	128	1033	11	0	3	950	79	0	153	7	436	0	4	4	2	0	2810
APPROACH %'s :	10.92%	88.14%	0.94%	0.00%	0.29%	92.05%	7.66%	0.00%	25.67%	1.17%	73.15%	0.00%	40.00%	40.00%	20.00%	0.00%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	80	608	5	0	2	529	53	0	91	5	275	0	3	2	1	0	1654
PEAK HR FACTOR :	0.714	0.974	0.625	0.000	0.500	0.900	0.552	0.000	0.734	0.625	0.781	0.000	0.375	0.500	0.250	0.000	0.911
	0.936				0.942				0.814				0.500				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	9	137	2	0	1	125	8	0	8	1	46	0	1	1	2	0	341
4:15 PM	12	139	0	0	0	129	7	0	14	0	51	0	3	2	0	0	357
4:30 PM	16	141	1	0	0	146	5	0	20	0	66	0	0	0	0	0	395
4:45 PM	10	135	0	0	1	159	7	0	17	1	68	0	4	0	0	0	402
5:00 PM	20	162	0	0	0	137	10	0	18	0	51	0	0	1	0	0	399
5:15 PM	14	138	0	0	0	143	14	0	10	1	76	0	0	1	1	0	398
5:30 PM	10	146	1	0	1	142	7	0	15	1	67	0	0	0	2	0	392
5:45 PM	9	144	1	0	0	138	7	0	8	0	67	0	2	0	0	0	376
TOTAL VOLUMES :	100	1142	5	0	3	1119	65	0	110	4	492	0	10	5	5	0	3060
APPROACH %'s :	8.02%	91.58%	0.40%	0.00%	0.25%	94.27%	5.48%	0.00%	18.15%	0.66%	81.19%	0.00%	50.00%	25.00%	25.00%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	60	576	1	0	1	585	36	0	65	2	261	0	4	2	1	0	1594
PEAK HR FACTOR :	0.750	0.889	0.250	0.000	0.250	0.920	0.643	0.000	0.813	0.500	0.859	0.000	0.250	0.500	0.250	0.000	0.991
	0.875				0.931				0.943				0.438				

Atlantic Ave & E Florence Ave

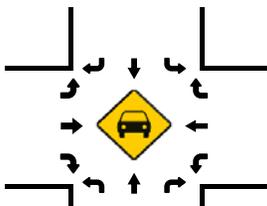
Peak Hour Turning Movement Count

ID: 19-05618-013
City: Cudahy

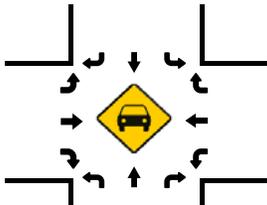
Day: Wednesday
Date: 10/16/2019



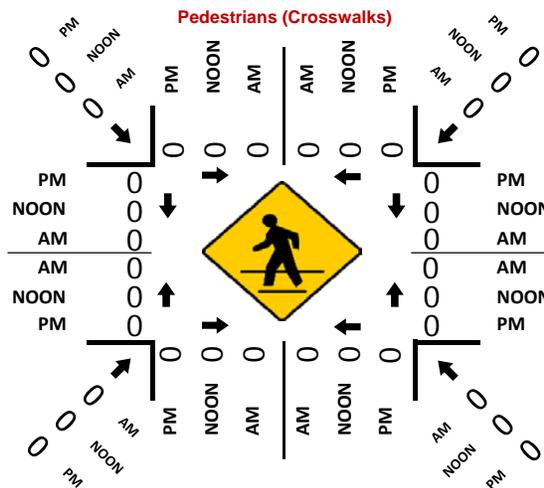
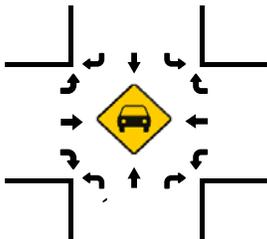
Total Vehicles (AM)



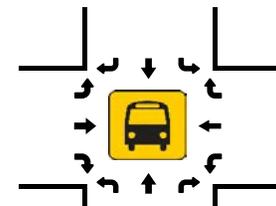
Total Vehicles (NOON)



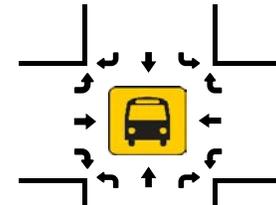
Total Vehicles (PM)



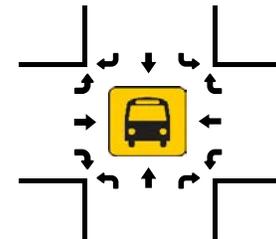
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & E Florence Ave
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-013
 Date: 10/16/2019

Total

NS/EW Streets:	Atlantic Ave				Atlantic Ave				E Florence Ave				E Florence Ave				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	2	1	0	2	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	49	185	28	0	35	91	15	0	45	188	27	0	33	243	18	0	957
7:15 AM	61	217	20	1	38	140	19	1	45	203	47	0	33	280	27	0	1132
7:30 AM	22	204	32	1	36	164	20	0	45	202	64	0	54	239	30	0	1113
7:45 AM	50	194	42	0	30	151	16	2	44	224	64	0	49	195	19	0	1080
8:00 AM	27	164	35	1	34	166	23	0	37	185	41	0	54	210	21	0	998
8:15 AM	34	129	16	0	37	155	15	0	29	171	28	0	46	192	22	0	874
8:30 AM	24	106	20	0	37	117	19	1	35	187	32	0	56	169	20	0	823
8:45 AM	32	146	25	0	33	109	24	1	20	152	23	0	39	196	32	0	832
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	299	1345	218	3	280	1093	151	5	300	1512	326	0	364	1724	189	0	7809
	16.03%	72.12%	11.69%	0.16%	18.31%	71.48%	9.88%	0.33%	14.03%	70.72%	15.25%	0.00%	15.99%	75.71%	8.30%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	160	779	129	3	138	621	78	3	171	814	216	0	190	924	97	0	4323
PEAK HR FACTOR :	0.656	0.897	0.768	0.750	0.908	0.935	0.848	0.375	0.950	0.908	0.844	0.000	0.880	0.825	0.808	0.000	0.955
	0.895				0.942				0.904				0.890				
PM	1	2	1	0	2	2	0	0	1	2	1	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	31	131	31	1	39	175	16	0	29	193	42	0	43	183	39	0	953
4:15 PM	37	132	33	0	46	177	18	1	30	207	28	0	37	175	34	0	955
4:30 PM	34	161	32	1	36	182	22	5	27	211	27	0	47	180	38	0	1003
4:45 PM	42	132	27	1	68	151	21	3	28	221	43	0	43	195	25	0	1000
5:00 PM	31	139	28	1	39	186	21	0	21	201	39	0	38	162	32	0	938
5:15 PM	29	115	20	0	48	171	15	1	33	200	33	0	48	183	42	0	938
5:30 PM	45	146	20	0	22	201	16	1	42	199	34	0	50	172	26	0	974
5:45 PM	29	141	37	1	52	185	19	1	29	219	35	0	42	200	31	0	1021
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	278	1097	228	5	350	1428	148	12	239	1651	281	0	348	1450	267	0	7782
	17.29%	68.22%	14.18%	0.31%	18.06%	73.68%	7.64%	0.62%	11.01%	76.05%	12.94%	0.00%	16.85%	70.22%	12.93%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	144	556	123	3	189	685	77	9	114	832	140	0	170	733	136	0	3911
PEAK HR FACTOR :	0.857	0.863	0.932	0.750	0.695	0.941	0.875	0.450	0.950	0.941	0.814	0.000	0.904	0.940	0.872	0.000	0.975
	0.906				0.980				0.930				0.980				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & Live Oak St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-014
 Date: 10/16/2019

Total

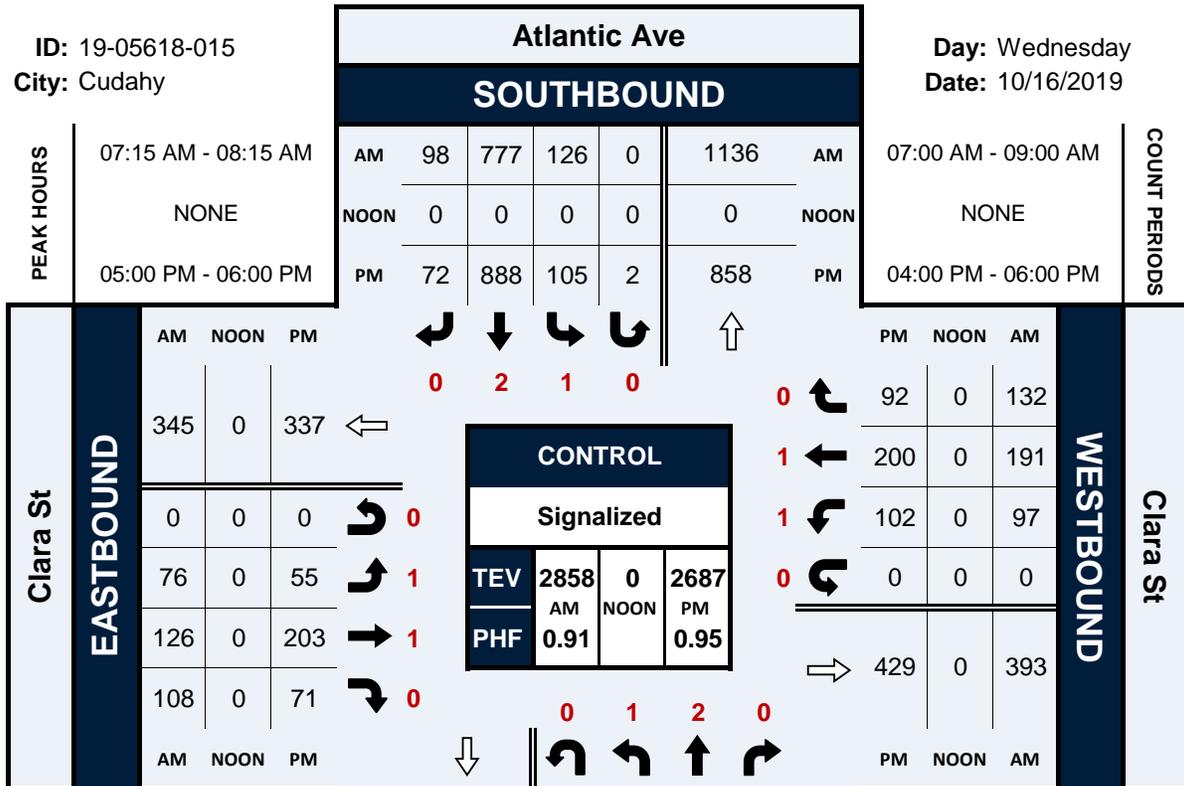
NS/EW Streets:	Atlantic Ave				Atlantic Ave				Live Oak St				Live Oak St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	6	269	25	0	8	132	5	0	7	19	7	0	11	16	26	0	531
7:15 AM	4	240	28	0	12	154	12	0	11	33	15	0	20	21	21	0	571
7:30 AM	20	247	37	0	20	218	17	0	16	43	26	0	28	39	16	0	727
7:45 AM	22	241	37	0	28	177	26	0	19	48	19	0	24	41	8	0	690
8:00 AM	10	195	35	0	10	220	10	0	20	33	11	0	27	25	13	0	609
8:15 AM	8	156	28	0	10	198	7	0	8	29	9	0	19	21	9	0	502
8:30 AM	3	150	17	0	4	183	5	0	6	15	7	0	21	12	7	0	430
8:45 AM	3	165	18	0	5	146	6	0	14	11	6	0	18	16	13	0	421
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	76	1663	225	0	97	1428	88	0	101	231	100	0	168	191	113	0	4481
	3.87%	84.67%	11.46%	0.00%	6.01%	88.53%	5.46%	0.00%	23.38%	53.47%	23.15%	0.00%	35.59%	40.47%	23.94%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	56	923	137	0	70	769	65	0	66	157	71	0	99	126	58	0	2597
PEAK HR FACTOR :	0.636	0.934	0.926	0.000	0.625	0.874	0.625	0.000	0.825	0.818	0.683	0.000	0.884	0.768	0.690	0.000	0.893
	0.918				0.886				0.855				0.852				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	7	163	20	0	19	205	14	0	16	35	9	0	31	17	9	0	545
4:15 PM	9	189	16	0	8	222	8	0	10	34	9	0	38	24	11	0	578
4:30 PM	7	197	28	0	14	194	19	0	13	25	9	0	34	22	12	0	574
4:45 PM	4	164	30	0	13	205	11	0	16	37	7	0	37	22	8	0	554
5:00 PM	15	159	21	0	21	203	19	0	5	21	9	0	23	16	14	0	526
5:15 PM	9	146	28	0	13	206	12	0	16	25	8	0	40	26	8	0	537
5:30 PM	7	189	30	0	15	235	16	0	8	32	8	0	34	19	20	0	613
5:45 PM	4	174	27	0	16	214	21	0	24	36	18	0	41	33	8	0	616
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	62	1381	200	0	119	1684	120	0	108	245	77	0	278	179	90	0	4543
	3.77%	84.05%	12.17%	0.00%	6.19%	87.57%	6.24%	0.00%	25.12%	56.98%	17.91%	0.00%	50.82%	32.72%	16.45%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	35	668	106	0	65	858	68	0	53	114	43	0	138	94	50	0	2292
PEAK HR FACTOR :	0.583	0.884	0.883	0.000	0.774	0.913	0.810	0.000	0.552	0.792	0.597	0.000	0.841	0.712	0.625	0.000	0.930
	0.895				0.931				0.673				0.860				

Atlantic Ave & Clara St

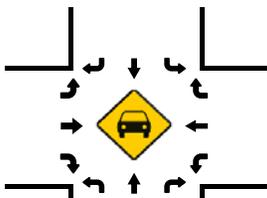
Peak Hour Turning Movement Count

ID: 19-05618-015
City: Cudahy

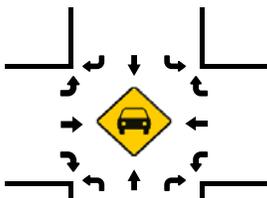
Day: Wednesday
Date: 10/16/2019



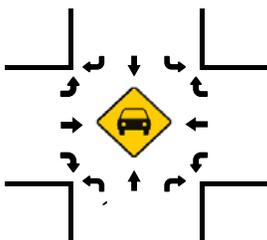
Total Vehicles (AM)



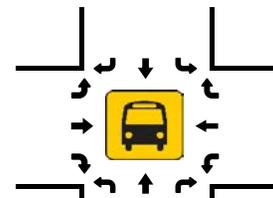
Total Vehicles (NOON)



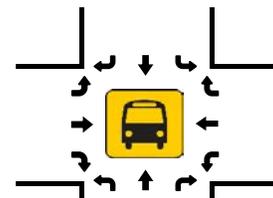
Total Vehicles (PM)



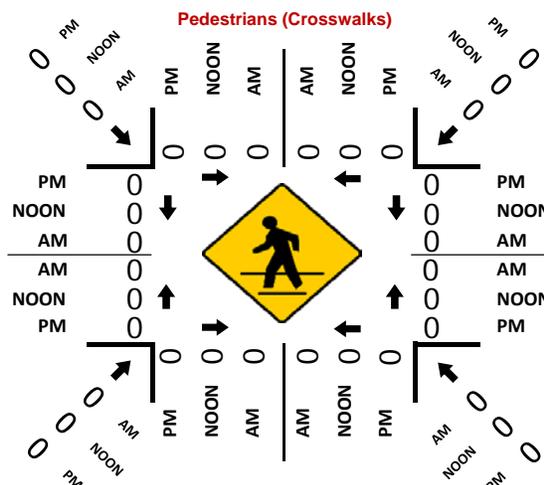
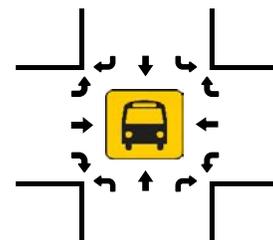
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & Clara St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-015
 Date: 10/16/2019

Total

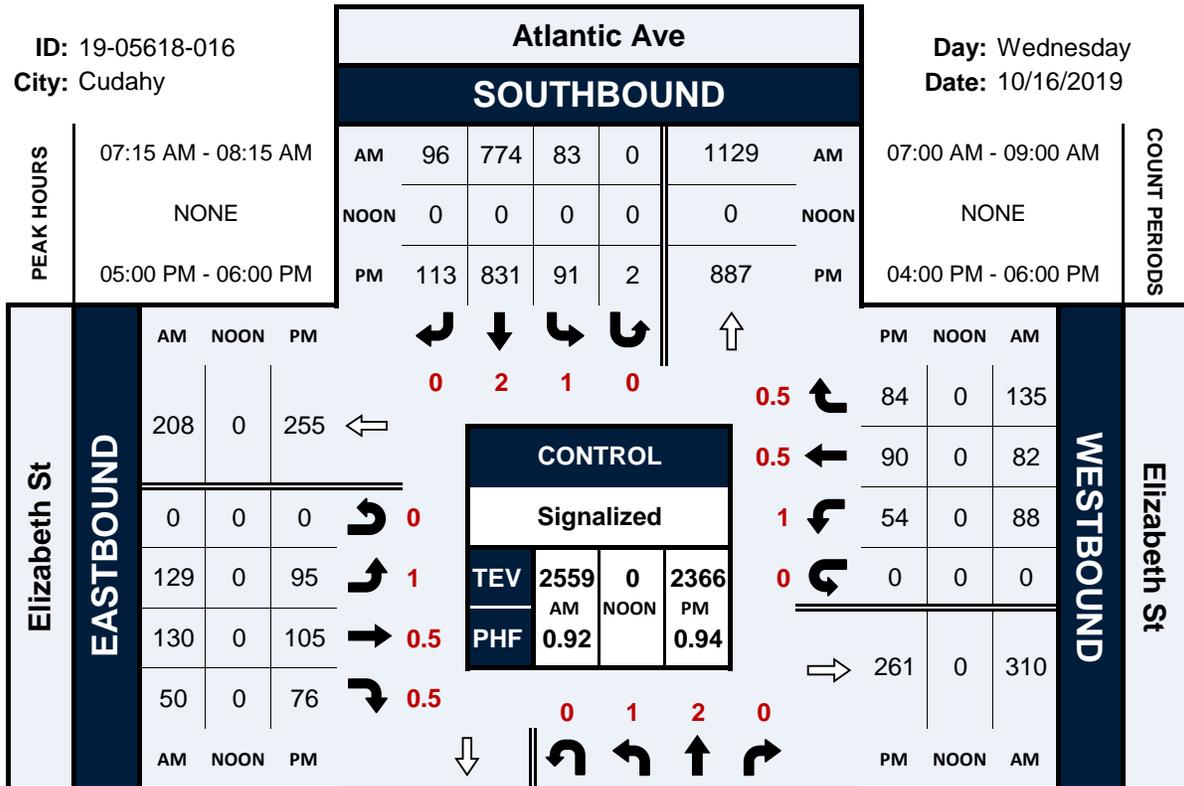
NS/EW Streets:	Atlantic Ave				Atlantic Ave				Clara St				Clara St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	4	247	19	0	18	124	8	0	13	41	18	0	23	42	33	0	590
7:15 AM	11	223	19	1	38	148	22	0	15	38	15	0	23	53	42	0	648
7:30 AM	21	256	37	0	29	221	47	0	21	21	46	0	20	42	27	0	788
7:45 AM	15	241	40	1	35	185	17	0	25	28	26	0	25	57	37	0	732
8:00 AM	9	208	45	0	24	223	12	0	15	39	21	0	29	39	26	0	690
8:15 AM	9	185	12	1	14	207	6	0	8	41	12	0	26	46	24	0	591
8:30 AM	11	141	17	0	6	191	9	0	8	29	14	0	15	31	13	0	485
8:45 AM	10	169	14	0	14	142	9	0	6	21	6	0	28	38	18	0	475
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	90	1670	203	3	178	1441	130	0	111	258	158	0	189	348	220	0	4999
	4.58%	84.94%	10.33%	0.15%	10.18%	82.39%	7.43%	0.00%	21.06%	48.96%	29.98%	0.00%	24.97%	45.97%	29.06%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	56	928	141	2	126	777	98	0	76	126	108	0	97	191	132	0	2858
PEAK HR FACTOR :	0.667	0.906	0.783	0.500	0.829	0.871	0.521	0.000	0.760	0.808	0.587	0.000	0.836	0.838	0.786	0.000	0.907
	0.897				0.843				0.881				0.882				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	7	200	6	0	10	220	10	0	8	35	9	0	22	18	19	0	564
4:15 PM	9	188	8	1	10	212	12	0	10	38	11	0	24	22	23	0	618
4:30 PM	10	195	12	0	18	210	15	0	14	42	14	0	25	35	28	0	625
4:45 PM	15	174	20	1	22	206	14	0	10	49	16	0	21	55	22	0	656
5:00 PM	20	179	31	0	32	211	16	0	12	47	16	0	25	47	20	0	646
5:15 PM	18	161	38	1	17	208	14	0	16	58	17	0	29	46	23	0	681
5:30 PM	17	174	26	1	34	225	26	1	12	45	20	0	26	46	28	0	704
5:45 PM	10	195	26	0	22	244	16	1	15	53	18	0	22	61	21	0	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	106	1466	167	4	165	1736	123	2	97	367	121	0	194	330	184	0	5062
	6.08%	84.11%	9.58%	0.23%	8.14%	85.69%	6.07%	0.10%	16.58%	62.74%	20.68%	0.00%	27.40%	46.61%	25.99%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	65	709	121	2	105	888	72	2	55	203	71	0	102	200	92	0	2687
PEAK HR FACTOR :	0.813	0.909	0.796	0.500	0.772	0.910	0.692	0.500	0.859	0.875	0.888	0.000	0.879	0.820	0.821	0.000	0.954
	0.971				0.933				0.904				0.947				

Atlantic Ave & Elizabeth St

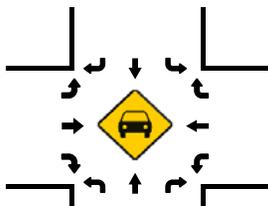
Peak Hour Turning Movement Count

ID: 19-05618-016
City: Cudahy

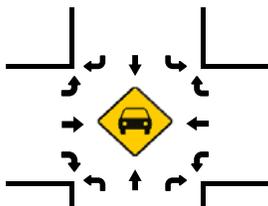
Day: Wednesday
Date: 10/16/2019



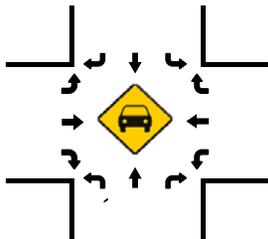
Total Vehicles (AM)



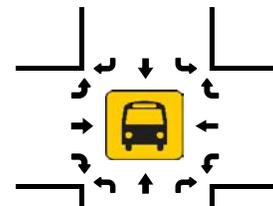
Total Vehicles (NOON)



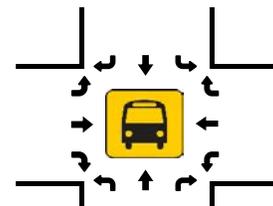
Total Vehicles (PM)



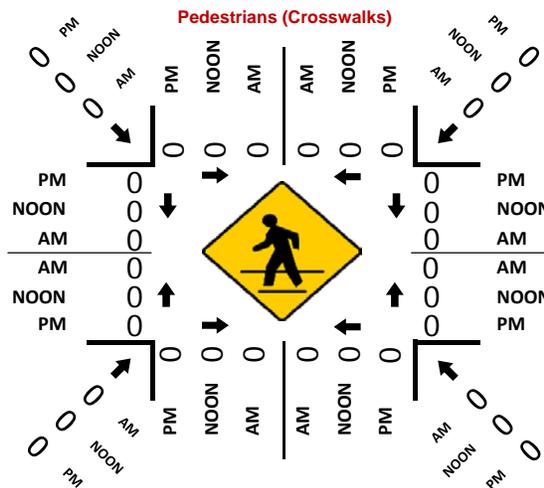
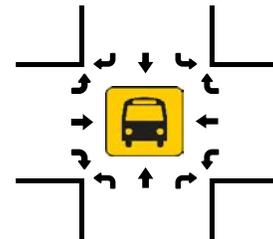
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & Elizabeth St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-016
 Date: 10/16/2019

Total

NS/EW Streets:	Atlantic Ave				Atlantic Ave				Elizabeth St				Elizabeth St				TOTAL
	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
AM	1	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	3	224	14	0	8	137	14	0	37	24	13	0	11	12	15	0	512
7:15 AM	4	229	8	0	13	172	17	0	28	23	12	0	12	12	18	0	548
7:30 AM	7	222	35	0	23	216	33	0	41	41	11	0	15	24	26	0	694
7:45 AM	10	220	41	0	30	170	26	0	36	44	19	0	25	21	46	0	688
8:00 AM	9	194	13	0	17	216	20	0	24	22	8	0	36	25	45	0	629
8:15 AM	4	180	11	0	18	203	27	1	18	19	7	0	18	10	20	0	536
8:30 AM	5	143	6	0	13	175	12	0	13	8	10	0	15	18	9	0	427
8:45 AM	15	172	10	0	12	125	17	0	18	15	8	0	13	10	18	0	433
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	57	1584	138	0	134	1414	166	1	215	196	88	0	145	132	197	0	4467
	3.20%	89.04%	7.76%	0.00%	7.81%	82.45%	9.68%	0.06%	43.09%	39.28%	17.64%	0.00%	30.59%	27.85%	41.56%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	30	865	97	0	83	774	96	0	129	130	50	0	88	82	135	0	2559
PEAK HR FACTOR :	0.750	0.944	0.591	0.000	0.692	0.896	0.727	0.000	0.787	0.739	0.658	0.000	0.611	0.820	0.734	0.000	0.922
	0.915				0.876				0.780				0.719				
PM	1	2	0	0	1	2	0	0	1	0.5	0.5	0	1	0.5	0.5	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	8	179	15	0	16	202	37	0	28	35	12	0	17	14	23	0	586
4:15 PM	14	167	6	0	24	205	27	0	28	16	7	0	15	29	20	0	558
4:30 PM	13	193	14	0	19	211	28	0	23	23	12	0	14	21	19	0	590
4:45 PM	8	167	16	0	23	194	19	0	25	36	11	0	14	19	12	0	544
5:00 PM	13	196	14	2	24	212	25	1	29	25	29	0	18	19	20	0	627
5:15 PM	10	155	11	0	20	197	24	0	24	22	19	0	7	18	17	0	524
5:30 PM	11	198	25	0	27	226	31	1	15	30	16	0	8	23	16	0	627
5:45 PM	18	157	15	0	20	196	33	0	27	28	12	0	21	30	31	0	588
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	95	1412	116	2	173	1643	224	2	199	215	118	0	114	173	158	0	4644
	5.85%	86.89%	7.14%	0.12%	8.47%	80.46%	10.97%	0.10%	37.41%	40.41%	22.18%	0.00%	25.62%	38.88%	35.51%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	52	706	65	2	91	831	113	2	95	105	76	0	54	90	84	0	2366
PEAK HR FACTOR :	0.722	0.891	0.650	0.250	0.843	0.919	0.856	0.500	0.819	0.875	0.655	0.000	0.643	0.750	0.677	0.000	0.943
	0.881				0.910				0.831				0.695				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & Santa Ana St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-017
 Date: 10/16/2019

Total

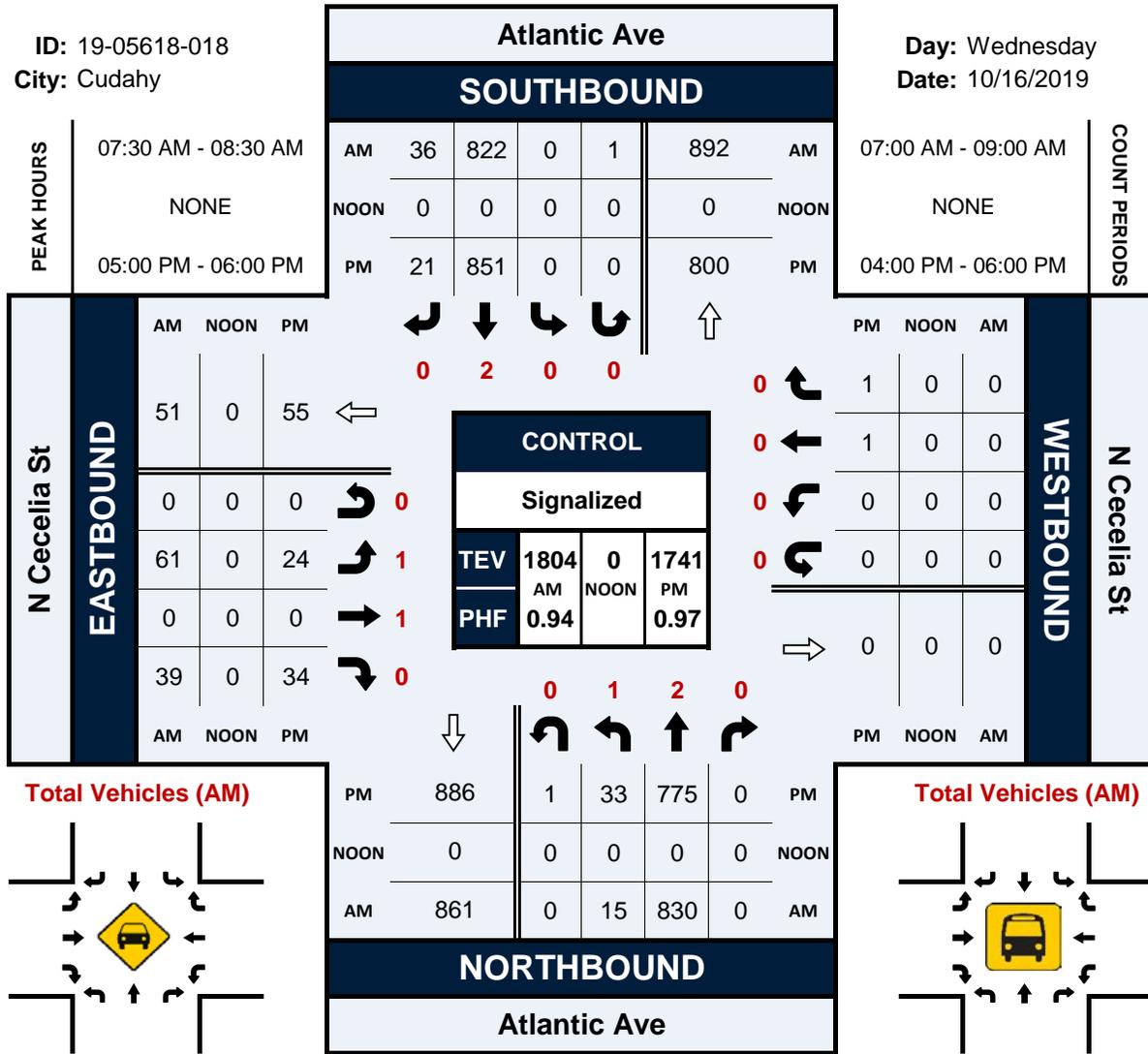
NS/EW Streets:	Atlantic Ave				Atlantic Ave				Santa Ana St				Santa Ana St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
7:00 AM	13	166	4	0	8	139	15	0	38	43	17	0	14	46	24	0	527
7:15 AM	11	179	4	1	7	150	28	0	35	50	23	0	26	57	24	0	595
7:30 AM	6	194	8	0	19	194	28	0	53	58	19	0	11	53	29	0	672
7:45 AM	15	201	10	1	21	170	27	0	42	57	11	0	21	59	24	0	659
8:00 AM	16	164	13	0	25	189	30	0	44	41	17	0	16	38	14	0	607
8:15 AM	11	165	8	1	11	182	26	0	34	40	18	0	10	30	9	0	545
8:30 AM	15	128	7	2	7	151	21	0	35	33	15	0	10	40	7	0	471
8:45 AM	11	138	6	1	14	129	19	0	38	37	17	0	9	35	17	0	471
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	98	1335	60	6	112	1304	194	0	319	359	137	0	117	358	148	0	4547
	6.54%	89.06%	4.00%	0.40%	6.96%	80.99%	12.05%	0.00%	39.14%	44.05%	16.81%	0.00%	18.78%	57.46%	23.76%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	48	738	35	2	72	703	113	0	174	206	70	0	74	207	91	0	2533
PEAK HR FACTOR :	0.750	0.918	0.673	0.500	0.720	0.906	0.942	0.000	0.821	0.888	0.761	0.000	0.712	0.877	0.784	0.000	0.942
	0.906				0.910				0.865				0.869				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	1 ER	0 EU	1 WL	1 WT	1 WR	0 WU	
4:00 PM	11	151	14	0	22	164	33	0	38	51	14	0	19	55	10	0	582
4:15 PM	27	144	11	1	26	170	35	1	32	64	11	0	20	42	9	0	593
4:30 PM	21	191	8	1	21	181	36	1	41	48	11	0	14	39	11	0	624
4:45 PM	14	161	13	2	19	173	37	0	36	55	5	0	21	47	13	0	596
5:00 PM	18	166	20	1	25	192	35	1	41	49	15	0	30	50	12	0	655
5:15 PM	23	158	16	1	18	176	35	0	37	68	8	0	20	40	6	0	606
5:30 PM	15	171	19	2	21	177	26	0	38	42	10	0	16	42	17	0	596
5:45 PM	18	159	11	1	15	200	34	0	38	55	8	0	20	37	11	0	607
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	147	1301	112	9	167	1433	271	3	301	432	82	0	160	352	89	0	4859
	9.37%	82.92%	7.14%	0.57%	8.91%	76.47%	14.46%	0.16%	36.93%	53.01%	10.06%	0.00%	26.62%	58.57%	14.81%	0.00%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	76	676	57	5	83	722	143	2	155	220	39	0	85	176	42	0	2481
PEAK HR FACTOR :	0.826	0.885	0.713	0.625	0.830	0.940	0.966	0.500	0.945	0.809	0.650	0.000	0.708	0.880	0.808	0.000	0.947
	0.921				0.939				0.916				0.823				

Atlantic Ave & N Cecelia St

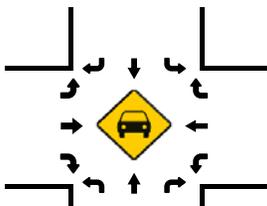
Peak Hour Turning Movement Count

ID: 19-05618-018
City: Cudahy

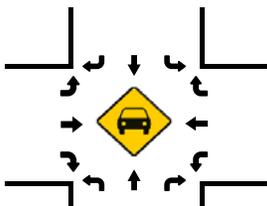
Day: Wednesday
Date: 10/16/2019



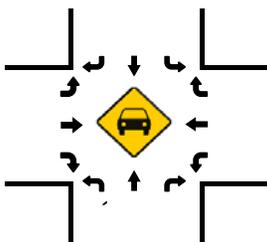
Total Vehicles (AM)



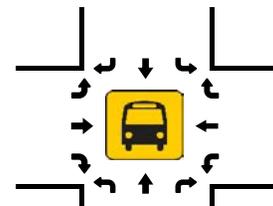
Total Vehicles (NOON)



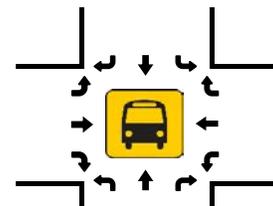
Total Vehicles (PM)



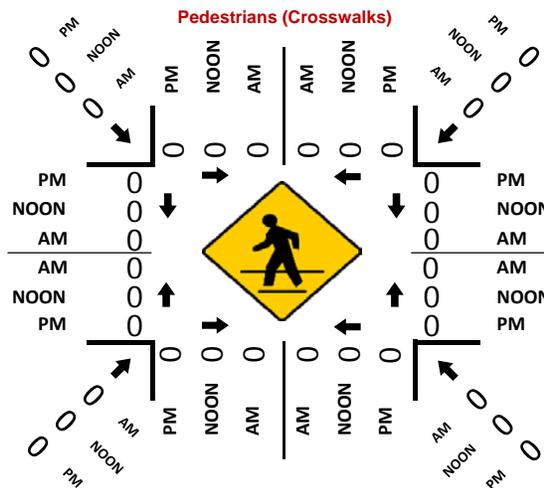
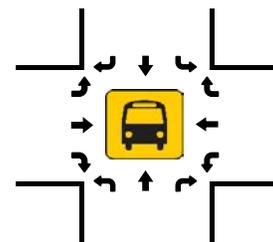
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & N Cecelia St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-018
 Date: 10/16/2019

Total

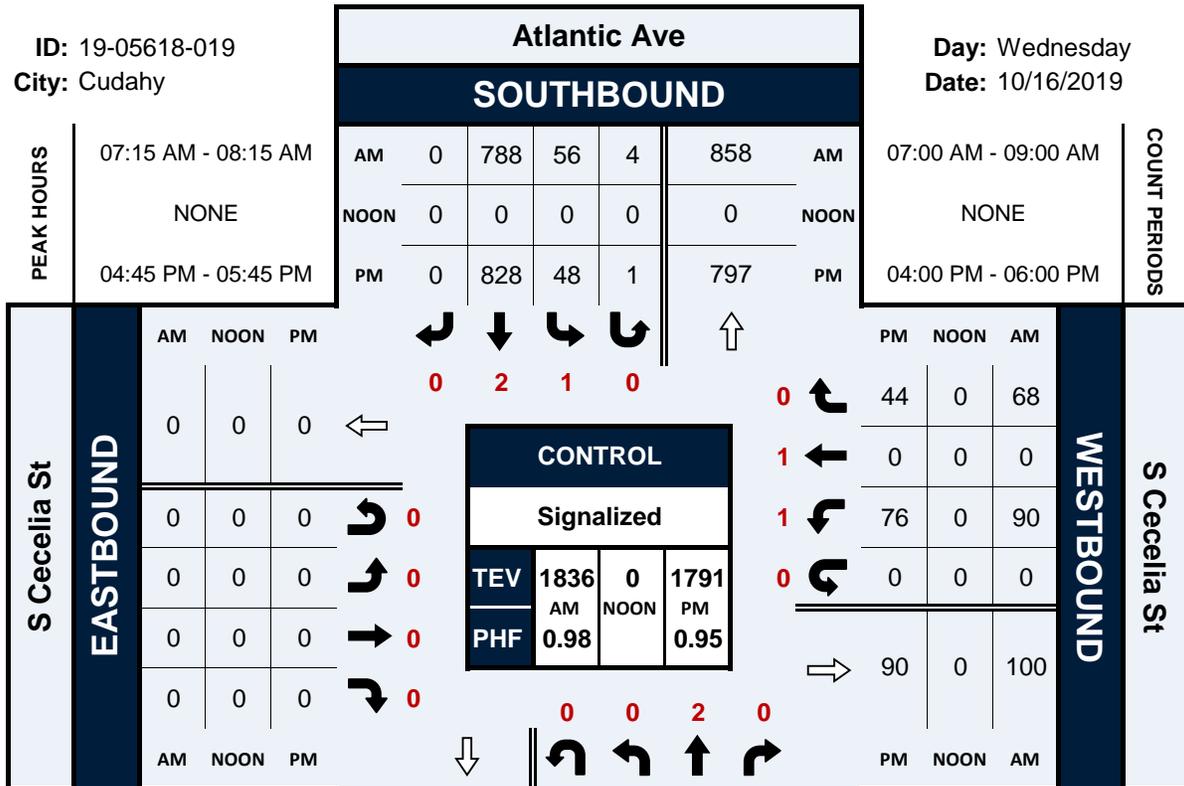
NS/EW Streets:	Atlantic Ave				Atlantic Ave				N Cecelia St				N Cecelia St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
7:00 AM	9	210	0	0	0	166	8	0	5	0	3	0	0	0	0	0	401
7:15 AM	8	189	0	0	0	168	5	0	10	0	15	0	0	0	0	0	395
7:30 AM	1	210	0	0	0	224	8	1	16	0	18	0	0	0	0	0	478
7:45 AM	6	227	0	0	0	189	14	0	24	0	8	0	0	0	0	0	468
8:00 AM	5	197	0	0	0	208	8	0	11	0	5	0	0	0	0	0	434
8:15 AM	3	196	0	0	0	201	6	0	10	0	8	0	0	0	0	0	424
8:30 AM	3	163	0	0	0	190	2	0	6	0	6	0	0	0	0	0	370
8:45 AM	1	151	0	0	0	145	5	1	6	0	4	0	0	0	1	0	314
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	36	1543	0	0	0	1491	56	2	88	0	67	0	0	0	1	0	3284
	2.28%	97.72%	0.00%	0.00%	0.00%	96.26%	3.62%	0.13%	56.77%	0.00%	43.23%	0.00%	0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	15	830	0	0	0	822	36	1	61	0	39	0	0	0	0	0	1804
PEAK HR FACTOR :	0.625	0.914	0.000	0.000	0.000	0.917	0.643	0.250	0.635	0.000	0.542	0.000	0.000	0.000	0.000	0.000	0.944
	0.907				0.922				0.735								
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
4:00 PM	8	162	0	0	0	183	7	0	9	0	5	0	0	0	0	0	374
4:15 PM	5	193	0	0	0	210	9	0	6	0	6	0	0	0	0	0	429
4:30 PM	2	191	0	0	0	188	6	1	7	0	13	0	0	0	0	0	408
4:45 PM	16	175	0	1	0	199	7	0	10	0	6	0	0	0	0	0	414
5:00 PM	9	202	0	0	0	216	4	0	3	0	13	0	0	0	0	0	447
5:15 PM	10	185	0	0	0	222	4	0	8	0	7	0	0	0	0	0	436
5:30 PM	5	204	0	0	0	201	6	0	6	0	7	0	0	1	1	0	431
5:45 PM	9	184	0	1	0	212	7	0	7	0	7	0	0	0	0	0	427
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	64	1496	0	2	0	1631	50	1	56	0	64	0	0	1	1	0	3366
	4.10%	95.77%	0.00%	0.13%	0.00%	96.97%	2.97%	0.06%	46.67%	0.00%	53.33%	0.00%	0.00%	50.00%	50.00%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	33	775	0	1	0	851	21	0	24	0	34	0	0	1	1	0	1741
PEAK HR FACTOR :	0.825	0.950	0.000	0.250	0.000	0.958	0.750	0.000	0.750	0.000	0.654	0.000	0.000	0.250	0.250	0.000	0.974
	0.959				0.965				0.906				0.250				

Atlantic Ave & S Cecelia St

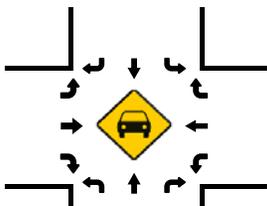
Peak Hour Turning Movement Count

ID: 19-05618-019
City: Cudahy

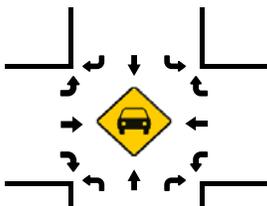
Day: Wednesday
Date: 10/16/2019



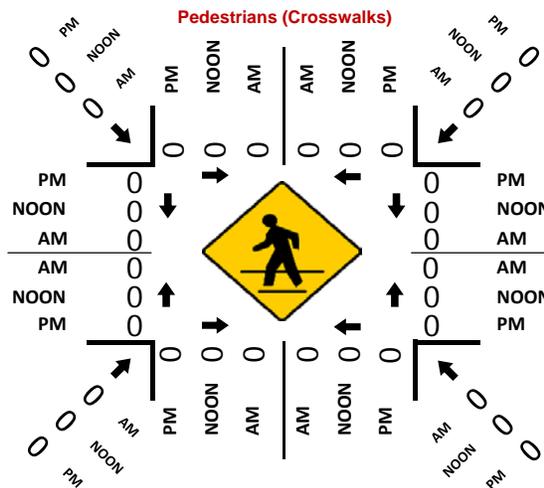
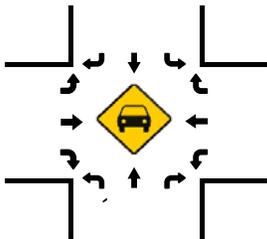
Total Vehicles (AM)



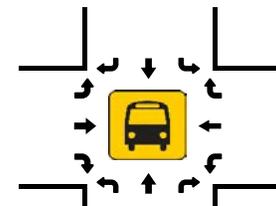
Total Vehicles (NOON)



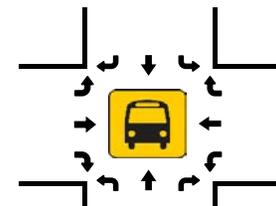
Total Vehicles (PM)



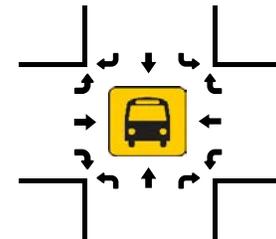
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Atlantic Ave & S Cecelia St
 City: Cudahy
 Control: Signalized

Project ID: 19-05618-019
 Date: 10/16/2019

Total

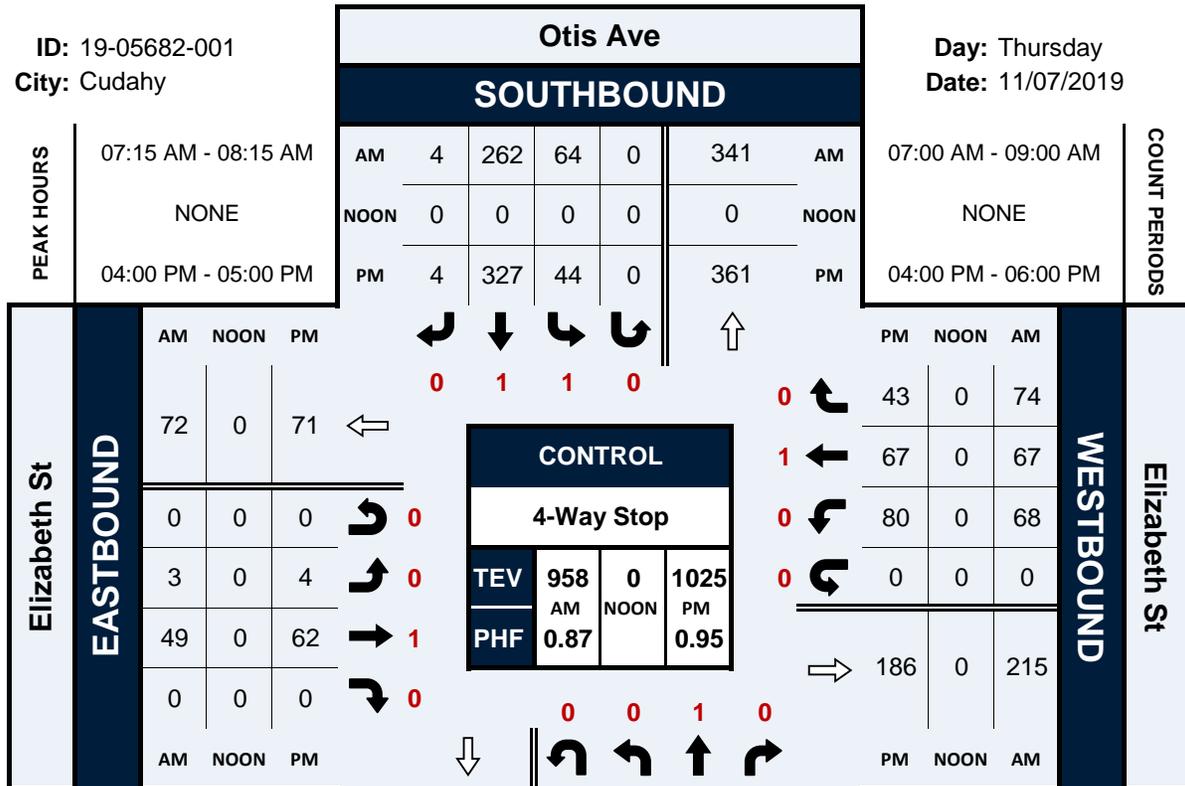
NS/EW Streets:	Atlantic Ave				Atlantic Ave				S Cecelia St				S Cecelia St					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
7:00 AM	0	186	6	0	8	154	0	1	0	0	0	0	16	0	17	0	388	
7:15 AM	0	188	6	0	12	194	0	1	0	0	0	0	26	0	15	0	442	
7:30 AM	0	187	9	0	14	216	0	0	0	0	0	0	21	0	13	0	460	
7:45 AM	0	221	13	0	20	167	0	2	0	0	0	0	21	0	26	0	470	
8:00 AM	0	190	16	0	10	211	0	1	0	0	0	0	22	0	14	0	464	
8:15 AM	0	171	18	0	13	190	0	1	0	0	0	0	19	0	17	0	429	
8:30 AM	0	158	11	0	13	174	0	1	0	0	0	0	15	0	9	0	381	
8:45 AM	0	146	7	0	9	145	0	0	0	0	0	0	16	0	9	0	332	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	0	1447	86	0	99	1451	0	7	0	0	0	0	156	0	120	0	3366	
APPROACH %'s :	0.00%	94.39%	5.61%	0.00%	6.36%	93.19%	0.00%	0.45%					56.52%	0.00%	43.48%	0.00%		
PEAK HR :	07:15 AM - 08:15 AM																	TOTAL
PEAK HR VOL :	0	786	44	0	56	788	0	4	0	0	0	0	90	0	68	0	1836	
PEAK HR FACTOR :	0.000	0.889	0.688	0.000	0.700	0.912	0.000	0.500	0.000	0.000	0.000	0.000	0.865	0.000	0.654	0.000	0.977	
		0.887				0.922							0.840					
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU		
4:00 PM	0	175	10	0	6	191	0	0	0	0	0	0	23	0	14	0	419	
4:15 PM	0	174	8	0	13	188	0	2	0	0	0	0	16	0	8	0	409	
4:30 PM	0	185	10	0	10	202	0	2	0	0	0	0	15	0	13	0	437	
4:45 PM	0	194	14	0	14	185	0	0	0	0	0	0	21	0	7	0	435	
5:00 PM	0	173	9	0	12	241	0	0	0	0	0	0	19	0	18	0	472	
5:15 PM	0	188	11	0	14	195	0	1	0	0	0	0	20	0	15	0	444	
5:30 PM	0	197	8	0	8	207	0	0	0	0	0	0	16	0	4	0	440	
5:45 PM	0	173	9	0	9	201	0	1	0	0	0	0	21	0	8	0	422	
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	0	1459	79	0	86	1610	0	6	0	0	0	0	151	0	87	0	3478	
APPROACH %'s :	0.00%	94.86%	5.14%	0.00%	5.05%	94.59%	0.00%	0.35%					63.45%	0.00%	36.55%	0.00%		
PEAK HR :	04:45 PM - 05:45 PM																	TOTAL
PEAK HR VOL :	0	752	42	0	48	828	0	1	0	0	0	0	76	0	44	0	1791	
PEAK HR FACTOR :	0.000	0.954	0.750	0.000	0.857	0.859	0.000	0.250	0.000	0.000	0.000	0.000	0.905	0.000	0.611	0.000	0.949	
		0.954				0.867							0.811					

Otis Ave & Elizabeth St

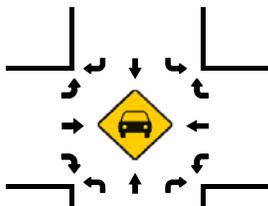
Peak Hour Turning Movement Count

ID: 19-05682-001
City: Cudahy

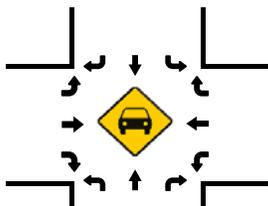
Day: Thursday
Date: 11/07/2019



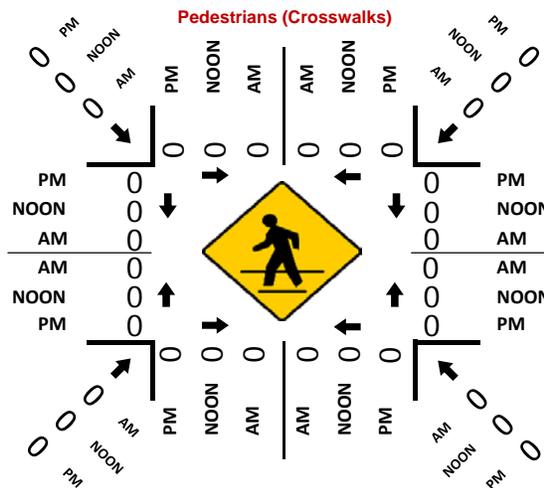
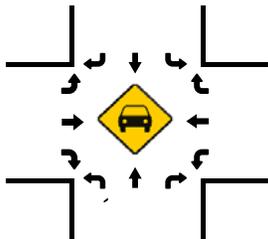
Total Vehicles (AM)



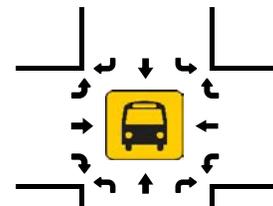
Total Vehicles (NOON)



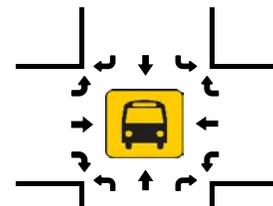
Total Vehicles (PM)



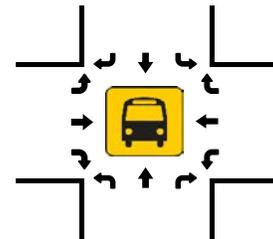
Total Vehicles (AM)



Total Vehicles (NOON)



Total Vehicles (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Otis Ave & Elizabeth St
 City: Cudahy
 Control: 4-Way Stop

Project ID: 19-05682-001
 Date: 11/7/2019

Total

NS/EW Streets:	Otis Ave				Otis Ave				Elizabeth St				Elizabeth St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	84	11	0	17	47	1	0	0	5	0	0	14	16	14	0	209
7:15 AM	0	83	26	0	13	66	0	0	1	8	0	0	21	31	25	0	274
7:30 AM	0	56	32	0	20	59	1	0	1	14	0	0	26	13	26	0	248
7:45 AM	0	60	22	0	20	71	3	0	1	11	0	0	8	12	11	0	219
8:00 AM	1	65	22	0	11	66	0	0	0	16	0	0	13	11	12	0	217
8:15 AM	0	65	23	0	15	55	1	0	0	8	0	0	13	9	4	0	193
8:30 AM	0	58	22	0	8	50	0	0	0	8	0	0	15	10	8	0	179
8:45 AM	0	63	20	0	9	51	1	0	0	8	0	0	15	8	11	0	186
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	1	534	178	0	113	465	7	0	3	78	0	0	125	110	111	0	1725
	0.14%	74.89%	24.96%	0.00%	19.32%	79.49%	1.20%	0.00%	3.70%	96.30%	0.00%	0.00%	36.13%	31.79%	32.08%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	1	264	102	0	64	262	4	0	3	49	0	0	68	67	74	0	958
PEAK HR FACTOR :	0.250	0.795	0.797	0.000	0.800	0.923	0.333	0.000	0.750	0.766	0.000	0.000	0.654	0.540	0.712	0.000	0.874
	0.842				0.878				0.813				0.679				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	80	18	0	10	87	1	0	1	17	0	0	18	18	11	0	261
4:15 PM	0	78	22	0	8	84	0	0	0	18	0	0	23	20	12	0	265
4:30 PM	0	87	20	0	12	83	3	0	1	14	0	0	19	17	13	0	269
4:45 PM	0	69	20	0	14	73	0	0	2	13	0	0	20	12	7	0	230
5:00 PM	0	82	18	0	15	66	0	0	0	17	0	0	20	16	16	0	250
5:15 PM	0	89	17	0	8	68	0	0	0	17	0	0	23	14	13	0	249
5:30 PM	0	84	23	0	18	72	0	0	0	18	0	0	13	7	8	0	243
5:45 PM	0	72	17	0	13	72	0	0	0	22	0	0	12	15	12	0	235
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	641	155	0	98	605	4	0	4	136	0	0	148	119	92	0	2002
	0.00%	80.53%	19.47%	0.00%	13.86%	85.57%	0.57%	0.00%	2.86%	97.14%	0.00%	0.00%	41.23%	33.15%	25.63%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	314	80	0	44	327	4	0	4	62	0	0	80	67	43	0	1025
PEAK HR FACTOR :	0.000	0.902	0.909	0.000	0.786	0.940	0.333	0.000	0.500	0.861	0.000	0.000	0.870	0.838	0.827	0.000	0.953
	0.921				0.957				0.917				0.864				

APPENDIX B

HCM AND LEVELS OF SERVICE EXPLANATION HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF CUDAHY

LEVEL OF SERVICE FOR UNSIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for unsignalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions, in the absence of incidents, control, traffic, or geometric delay. Only the portion of total delay attributed to the traffic control measures, either traffic signals or stop signs, is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for unsignalized intersections are stated in terms of the average control delay per vehicle. The level of service is determined by the computed or measured control delay and is defined for each minor movement. Average control delay for any particular minor movement is a function of the service time for the approach and the degree of utilization. (Level of service is not defined for the intersection as a whole for two-way stop controlled intersections.)

Level of Service Criteria for TWSC/AWSC Intersections	
Level of Service	Average Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle.

LOS B describes operations with control delay greater than 10 and up to 15 seconds per vehicle.

LOS C describes operations with control delay greater than 15 and up to 25 seconds per vehicle.

LOS D describes operations with control delay greater than 25 and up to 35 seconds per vehicle.

LOS E describes operations with control delay greater than 35 and up to 50 seconds per vehicle.

LOS F describes operations with control delay in excess of 50 seconds per vehicle. For two-way stop controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side-street demand to safely cross through a major-street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches.

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for traffic signals are stated in terms of the average control delay per vehicle. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service Criteria for Signalized Intersections	
Level of Service	Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

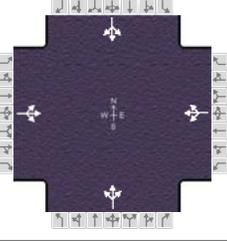
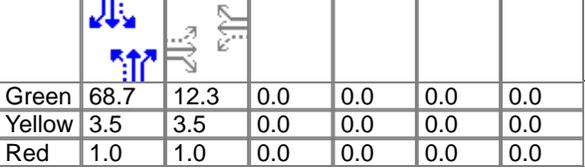
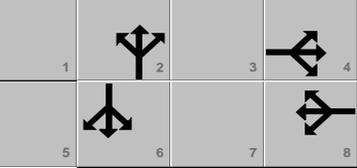
LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

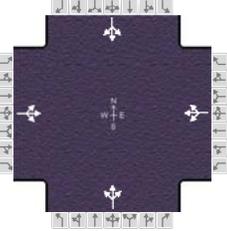
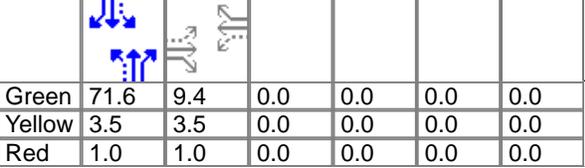
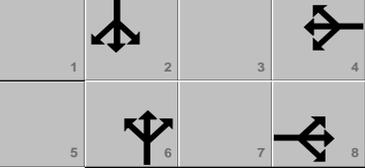
LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

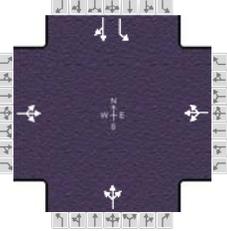
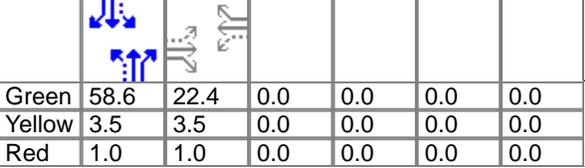
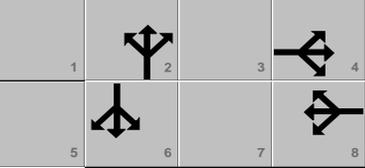
HCS7 Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	LLG Engineers				Duration, h	0.25										
Analyst	AS	Analysis Date	Nov 13, 2019		Area Type	Other										
Jurisdiction	City of Cudahy		Time Period	Existing - AM		PHF	0.92									
Urban Street	Otis / Live Oak		Analysis Year	2019		Analysis Period	1 > 7:00									
Intersection	Interesction #8		File Name	08AM - Existing.xus												
Project Description	7801-7835 Otis Avenue Charter School															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					26	60	30	35	56	82	28	396	47	67	308	18
Signal Information																
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On													
Force Mode	Fixed	Simult. Gap N/S	On													
Green	68.7	12.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8		2		6				
Case Number						8.0		8.0		8.0		8.0				
Phase Duration, s						16.8		16.8		73.2		73.2				
Change Period, (Y+R _c), s						4.5		4.5		4.5		4.5				
Max Allow Headway (MAH), s						3.3		3.3		0.0		0.0				
Queue Clearance Time (g _s), s						7.9		11.7								
Green Extension Time (g _e), s						0.6		0.6		0.0		0.0				
Phase Call Probability						1.00		1.00								
Max Out Probability						0.00		0.00								
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					126			188			512			427		
Adjusted Saturation Flow Rate (s), veh/h/ln					1728			1680			1816			1641		
Queue Service Time (g _s), s					0.0			3.8			0.0			0.0		
Cycle Queue Clearance Time (g _c), s					5.9			9.7			8.0			6.2		
Green Ratio (g/C)					0.14			0.14			0.76			0.76		
Capacity (c), veh/h					284			277			1429			1300		
Volume-to-Capacity Ratio (X)					0.443			0.679			0.358			0.329		
Back of Queue (Q), ft/ln (95 th percentile)					117			183.8			115.6			91.6		
Back of Queue (Q), veh/ln (95 th percentile)					4.7			7.4			4.6			3.7		
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh					36.1			37.7			3.5			3.2		
Incremental Delay (d ₂), s/veh					0.4			1.1			0.7			0.7		
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0		
Control Delay (d), s/veh					36.5			38.8			4.2			3.9		
Level of Service (LOS)					D			D			A			A		
Approach Delay, s/veh / LOS					36.5	D	38.8	D	4.2	A	3.9	A				
Intersection Delay, s/veh / LOS					12.5						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					1.71	B	1.71	B	1.61	B	1.61	B				
Bicycle LOS Score / LOS					0.70	A	0.80	A	1.33	A	1.19	A				

HCS7 Signalized Intersection Results Summary

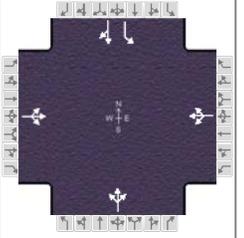
General Information					Intersection Information											
Agency	LLG Engineers				Duration, h	0.25										
Analyst	AS	Analysis Date	Nov 13, 2019		Area Type	Other										
Jurisdiction	City of Cudahy		Time Period	Existing - PM		PHF	0.92									
Urban Street	Otis / Live Oak		Analysis Year	2019		Analysis Period	1 > 17:00									
Intersection	Interesction #8		File Name	08PM - Existing.xus												
Project Description	7801-7835 Otis Avenue Charter School															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					13	57	18	37	42	45	20	294	43	49	326	22
Signal Information																
Cycle, s	90.0	Reference Phase	2		Green	71.6	9.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	End		Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On		Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On													
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						8		4		6		2				
Case Number						8.0		8.0		8.0		8.0				
Phase Duration, s						13.9		13.9		76.1		76.1				
Change Period, (Y+R _c), s						4.5		4.5		4.5		4.5				
Max Allow Headway (MAH), s						3.2		3.2		0.0		0.0				
Queue Clearance Time (g _s), s						6.5		9.0								
Green Extension Time (g _e), s						0.4		0.4		0.0		0.0				
Phase Call Probability						1.00		1.00								
Max Out Probability						0.00		0.00								
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h					96			135			388			432		
Adjusted Saturation Flow Rate (s), veh/h/ln					1790			1659			1810			1740		
Queue Service Time (g _s), s					0.0			2.6			0.0			0.0		
Cycle Queue Clearance Time (g _c), s					4.5			7.0			4.8			5.5		
Green Ratio (g/C)					0.10			0.10			0.80			0.80		
Capacity (c), veh/h					232			225			1483			1430		
Volume-to-Capacity Ratio (X)					0.412			0.599			0.262			0.302		
Back of Queue (Q), ft/ln (95 th percentile)					88.9			129.9			51.6			59.9		
Back of Queue (Q), veh/ln (95 th percentile)					3.6			5.2			2.1			2.4		
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh					38.1			39.2			2.4			2.4		
Incremental Delay (d ₂), s/veh					0.4			1.0			0.4			0.5		
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0		
Control Delay (d), s/veh					38.5			40.1			2.8			3.0		
Level of Service (LOS)					D			D			A			A		
Approach Delay, s/veh / LOS					38.5	D	40.1	D	2.8	A	3.0	A				
Intersection Delay, s/veh / LOS					10.9						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					1.72	B	1.72	B	1.60	B	1.60	B				
Bicycle LOS Score / LOS					0.65	A	0.71	A	1.13	A	1.20	A				

HCS7 Signalized Intersection Results Summary

General Information					Intersection Information											
Agency	LLG Engineers				Duration, h	0.25										
Analyst	AS	Analysis Date	Nov 13, 2019		Area Type	Other										
Jurisdiction	City of Cudahy		Time Period	Existing - AM		PHF	0.92									
Urban Street	Otis / Clara		Analysis Year	2019		Analysis Period	1 > 7:00									
Intersection	Interesction #9		File Name	09AM - Existing.xus												
Project Description	7801-7835 Otis Avenue Charter School															
Demand Information					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h					16	108	14	105	107	123	6	266	110	77	216	14
Signal Information																
Cycle, s	90.0	Reference Phase	2		Green	58.6	22.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End		Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On		Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On													
Timer Results					EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase						4		8		2		6				
Case Number						8.0		8.0		8.0		6.0				
Phase Duration, s						26.9		26.9		63.1		63.1				
Change Period, (Y+R _c), s						4.5		4.5		4.5		4.5				
Max Allow Headway (MAH), s						3.3		3.3		0.0		0.0				
Queue Clearance Time (g _s), s						7.9		21.9								
Green Extension Time (g _e), s						1.1		0.5		0.0		0.0				
Phase Call Probability						1.00		1.00								
Max Out Probability						0.00		0.87								
Movement Group Results					EB			WB			NB			SB		
Approach Movement					L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement					7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h					150			364			415			84	250	
Adjusted Saturation Flow Rate (s), veh/h/ln					1798			1596			1802			992	1879	
Queue Service Time (g _s), s					0.0			14.0			0.0			3.8	4.8	
Cycle Queue Clearance Time (g _c), s					5.9			19.9			9.4			13.1	4.8	
Green Ratio (g/C)					0.25			0.25			0.65			0.65	0.65	
Capacity (c), veh/h					492			450			1213			623	1223	
Volume-to-Capacity Ratio (X)					0.305			0.809			0.342			0.134	0.204	
Back of Queue (Q), ft/ln (95 th percentile)					117.4			333.1			159.1			39.1	84.5	
Back of Queue (Q), veh/ln (95 th percentile)					4.7			13.3			6.4			1.6	3.4	
Queue Storage Ratio (RQ) (95 th percentile)					0.00			0.00			0.00			0.00	0.00	
Uniform Delay (d ₁), s/veh					27.6			32.7			7.1			10.1	6.3	
Incremental Delay (d ₂), s/veh					0.1			7.7			0.8			0.4	0.4	
Initial Queue Delay (d ₃), s/veh					0.0			0.0			0.0			0.0	0.0	
Control Delay (d), s/veh					27.7			40.3			7.9			10.5	6.7	
Level of Service (LOS)					C			D			A			B	A	
Approach Delay, s/veh / LOS					27.7	C		40.3	D		7.9	A		7.7	A	
Intersection Delay, s/veh / LOS					19.5						B					
Multimodal Results					EB			WB			NB			SB		
Pedestrian LOS Score / LOS					1.70	B		1.93	B		1.64	B		1.64	B	
Bicycle LOS Score / LOS					0.74	A		1.09	A		1.17	A		1.04	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 13, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Otis / Clara	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Interesction #9	File Name	09PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	11	115	6	110	91	63	5	264	110	76	276	22

Signal Information				Signal Phases							
Cycle, s	90.0	Reference Phase	2	1	2	3	4	5	6	7	8
Offset, s	0	Reference Point	End	Green	62.4	18.6	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0

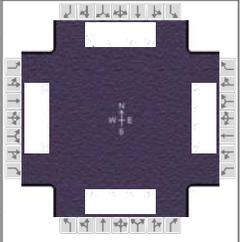
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		23.1		23.1		66.9		66.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.9		18.0				
Green Extension Time (g _e), s		0.9		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.08				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	143			287			412			83 324		
Adjusted Saturation Flow Rate (s), veh/h/ln	1854			1560			1801			994 1875		
Queue Service Time (g _s), s	0.0			10.1			0.0			3.2 5.8		
Cycle Queue Clearance Time (g _c), s	5.9			16.0			8.2			11.4 5.8		
Green Ratio (g/C)	0.21			0.21			0.69			0.69 0.69		
Capacity (c), veh/h	427			380			1289			679 1299		
Volume-to-Capacity Ratio (X)	0.336			0.756			0.320			0.122 0.249		
Back of Queue (Q), ft/ln (95 th percentile)	119.3			262.2			131			32.6 95.7		
Back of Queue (Q), veh/ln (95 th percentile)	4.8			10.5			5.2			1.3 3.8		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	30.6			34.5			5.5			7.8 5.1		
Incremental Delay (d ₂), s/veh	0.2			3.2			0.7			0.4 0.5		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	30.8			37.7			6.2			8.1 5.6		
Level of Service (LOS)	C			D			A			A A		
Approach Delay, s/veh / LOS	30.8	C		37.7	D		6.2	A		6.1	A	
Intersection Delay, s/veh / LOS	16.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.93	B	1.63	B	1.63	B
Bicycle LOS Score / LOS	0.72	A	0.96	A	1.17	A	1.16	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Existing - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	171	814	216	190	924	97	163	779	129	141	621	78

Signal Information				Signal Timing Diagram									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		11.0	0.6	30.5	5.9	2.6	21.5				
		Yellow		3.5	0.0	3.5	3.5	0.0	3.5				
		Red		1.0	0.0	1.0	1.0	0.0	1.0				

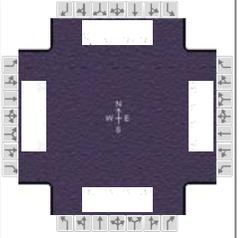
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.5	35.0	16.0	35.6	13.0	28.6	10.4	26.0
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	11.0		12.1		10.5	22.1	5.8	19.6
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.9	0.1	1.9
Phase Call Probability	0.99		0.99		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	0.84	1.00	0.85

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	186	885	235	207	1004	105	177	847	140	153	387	373
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1825
Queue Service Time (g_s), s	9.0	19.3	10.2	10.1	22.7	4.1	8.5	20.1	5.2	3.8	17.5	17.6
Cycle Queue Clearance Time (g_c), s	9.0	19.3	10.2	10.1	22.7	4.1	8.5	20.1	5.2	3.8	17.5	17.6
Green Ratio (g/C)	0.12	0.34	0.34	0.13	0.35	0.35	0.09	0.27	0.40	0.07	0.24	0.24
Capacity (c), veh/h	220	1226	546	232	1249	556	171	969	637	229	453	436
Volume-to-Capacity Ratio (X)	0.844	0.722	0.430	0.891	0.804	0.190	1.037	0.874	0.220	0.669	0.854	0.856
Back of Queue (Q), ft/ln (95 th percentile)	224.1	331.5	182.6	262.4	385.5	72.5	301.5	360.2	83.2	74.9	355	346.5
Back of Queue (Q), veh/ln (95 th percentile)	9.0	13.3	7.3	10.5	15.4	2.9	12.1	14.4	3.3	3.0	14.2	13.9
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	38.7	26.0	23.0	38.6	26.7	20.6	40.8	31.5	18.0	41.1	32.8	32.8
Incremental Delay (d_2), s/veh	21.5	3.7	2.5	31.2	5.6	0.8	78.8	7.3	0.1	1.3	11.7	12.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.2	29.7	25.5	69.8	32.3	21.4	119.6	38.8	18.1	42.4	44.5	45.1
Level of Service (LOS)	E	C	C	E	C	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	33.3		C	37.3		D	48.6		D	44.4		D
Intersection Delay, s/veh / LOS	40.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.56	B	1.57	B	1.45	A	1.24	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Existing - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	114	832	140	170	733	136	147	556	123	198	685	77

Signal Information				Signal Timing Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	7.7	2.9	30.5	7.4	1.1	22.4						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

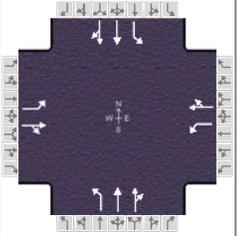
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	12.2	35.0	15.1	37.9	13.0	28.0	11.9	26.9
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	8.0		11.0		9.9	15.3	7.4	21.3
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.1	1.1
Phase Call Probability	0.95		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.26	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	124	904	152	185	797	148	160	604	134	215	421	407
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1832
Queue Service Time (g_s), s	6.0	19.8	6.2	9.0	16.0	5.7	7.9	13.3	5.1	5.4	19.3	19.3
Cycle Queue Clearance Time (g_c), s	6.0	19.8	6.2	9.0	16.0	5.7	7.9	13.3	5.1	5.4	19.3	19.3
Green Ratio (g/C)	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.26	0.38	0.08	0.25	0.25
Capacity (c), veh/h	155	1226	546	214	1343	598	171	943	610	289	472	455
Volume-to-Capacity Ratio (X)	0.798	0.738	0.279	0.865	0.593	0.247	0.935	0.641	0.219	0.744	0.892	0.893
Back of Queue (Q), ft/ln (95 th percentile)	136.4	340.2	109.9	235.2	277	99.4	242.8	240.7	81.9	113.2	402.3	392.9
Back of Queue (Q), veh/ln (95 th percentile)	5.5	13.6	4.4	9.4	11.1	4.0	9.7	9.6	3.3	4.5	16.1	15.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	40.4	26.2	21.7	39.0	22.8	19.6	40.5	29.5	18.9	40.4	32.7	32.7
Incremental Delay (d_2), s/veh	9.4	4.0	1.3	27.8	1.9	1.0	49.5	1.0	0.1	6.1	16.9	17.5
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.8	30.2	23.0	66.8	24.8	20.6	90.0	30.5	19.0	46.4	49.6	50.2
Level of Service (LOS)	D	C	C	E	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	31.3		C	31.1		C	39.4		D	49.2		D
Intersection Delay, s/veh / LOS	37.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.46	A	1.42	A	1.23	A	1.35	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92		
Urban Street	Atlantic / Live Oak		Analysis Year	2019	Analysis Period	1 > 7:15	
Intersection	Interesction #14	File Name	14AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	66	157	71	99	126	58	56	923	137	70	769	65

Signal Information				Signal Phases									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End	Green	4.7	0.4	49.6	21.8	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0

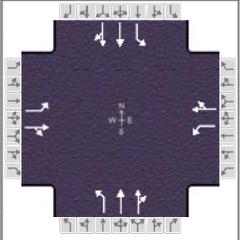
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		26.3		26.3	9.2	54.1	9.6	54.5
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		15.4		21.0	5.0		5.7	
Green Extension Time (g_e), s		1.2		0.8	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.78		0.85	
Max Out Probability		0.05		0.61	0.03		0.13	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	72	248		108	200		61	589	563	76	460	447
Adjusted Saturation Flow Rate (s), veh/h/ln	1201	1799		1150	1798		1810	1900	1814	1810	1900	1847
Queue Service Time (g_s), s	4.9	10.9		8.2	8.5		3.0	18.1	18.2	3.7	12.8	12.8
Cycle Queue Clearance Time (g_c), s	13.4	10.9		19.0	8.5		3.0	18.1	18.2	3.7	12.8	12.8
Green Ratio (g/C)	0.24	0.24		0.24	0.24		0.05	0.55	0.55	0.06	0.56	0.56
Capacity (c), veh/h	257	435		219	435		94	1048	1000	103	1056	1027
Volume-to-Capacity Ratio (X)	0.279	0.569		0.490	0.460		0.645	0.562	0.563	0.741	0.435	0.435
Back of Queue (Q), ft/ln (95 th percentile)	64.7	207.6		104.8	166.5		61.6	301.6	291.8	78.1	224.2	219.7
Back of Queue (Q), veh/ln (95 th percentile)	2.6	8.3		4.2	6.7		2.5	12.1	11.7	3.1	9.0	8.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	34.8	30.0		38.3	29.1		41.8	13.1	13.1	41.8	11.7	11.7
Incremental Delay (d_2), s/veh	0.2	0.4		0.6	0.3		2.7	2.2	2.3	3.9	1.3	1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	35.0	30.4		39.0	29.4		44.6	15.3	15.4	45.7	13.0	13.0
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.5	C		32.7	C		16.8	B		15.6	B	
Intersection Delay, s/veh / LOS	19.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.01	A	1.00	A	1.49	A	1.30	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Atlantic / Live Oak		Analysis Year	2019	Analysis Period	1 > 17:00	
Intersection	Intersecion #14	File Name	14PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	53	114	43	138	94	50	35	668	106	65	858	68

Signal Information				Signal Timing (s)									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	1.3	51.0	20.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

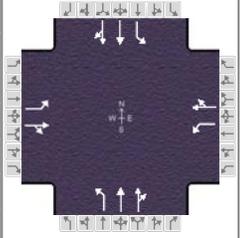
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.0		25.0	8.2	55.5	9.5	56.8
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		12.3		19.8	3.9		5.5	
Green Extension Time (g_e), s		1.1		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.61		0.83	
Max Out Probability		0.01		0.30	0.00		0.01	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	58	171		150	157		38	431	410	71	510	497
Adjusted Saturation Flow Rate (s), veh/h/ln	1250	1811		1234	1788		1810	1900	1809	1810	1900	1850
Queue Service Time (g_s), s	3.7	7.2		10.6	6.7		1.9	11.4	11.4	3.5	13.8	13.8
Cycle Queue Clearance Time (g_c), s	10.3	7.2		17.8	6.7		1.9	11.4	11.4	3.5	13.8	13.8
Green Ratio (g/C)	0.23	0.23		0.23	0.23		0.04	0.57	0.57	0.06	0.58	0.58
Capacity (c), veh/h	273	413		263	408		74	1077	1025	100	1104	1075
Volume-to-Capacity Ratio (X)	0.211	0.413		0.571	0.384		0.514	0.400	0.400	0.706	0.462	0.462
Back of Queue (Q), ft/ln (95 th percentile)	50.7	142.3		145.5	129.5		38.4	203.9	196.9	72.2	236	231.4
Back of Queue (Q), veh/ln (95 th percentile)	2.0	5.7		5.8	5.2		1.5	8.2	7.9	2.9	9.4	9.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	33.7	29.6		37.2	29.4		42.3	10.9	10.9	41.8	10.8	10.8
Incremental Delay (d_2), s/veh	0.1	0.2		0.7	0.2		2.0	1.1	1.2	3.4	1.4	1.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	33.9	29.9		37.9	29.6		44.3	12.0	12.1	45.2	12.2	12.2
Level of Service (LOS)	C	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	30.9	C		33.7	C		13.5	B		14.4	B	
Intersection Delay, s/veh / LOS	17.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.86	A	0.99	A	1.21	A	1.38	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92		
Urban Street	Atlantic / Clara	Analysis Year	2019	Analysis Period	1 > 7:15		
Intersection	Interesction #15	File Name	15AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	76	126	108	97	191	132	58	928	141	126	777	98

Signal Information				Phase Diagram									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		4.8	2.1	44.5	25.1	0.0	0.0				
		Yellow		3.5	0.0	3.5	3.5	0.0	0.0				
		Red		1.0	0.0	1.0	1.0	0.0	0.0				

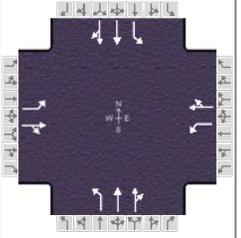
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		29.6		29.6	9.3	49.0	11.4	51.1
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		25.0		20.7	5.1		8.8	
Green Extension Time (g_e), s		0.2		1.1	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.79		0.97	
Max Out Probability		1.00		0.61	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	83	254		105	351		63	594	568	137	485	466
Adjusted Saturation Flow Rate (s), veh/h/ln	1046	1754		1143	1770		1810	1900	1812	1810	1900	1825
Queue Service Time (g_s), s	6.9	11.0		7.7	16.1		3.1	20.7	20.8	6.8	14.9	14.9
Cycle Queue Clearance Time (g_c), s	23.0	11.0		18.7	16.1		3.1	20.7	20.8	6.8	14.9	14.9
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.05	0.49	0.49	0.08	0.52	0.52
Capacity (c), veh/h	186	490		259	494		96	940	896	138	984	945
Volume-to-Capacity Ratio (X)	0.445	0.519		0.406	0.711		0.659	0.632	0.633	0.993	0.493	0.493
Back of Queue (Q), ft/ln (95 th percentile)	80.5	201.4		97.4	291.8		63.9	350.6	338.9	243.6	260.5	252.9
Back of Queue (Q), veh/ln (95 th percentile)	3.2	8.1		3.9	11.7		2.6	14.0	13.6	9.7	10.4	10.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.5	27.3		35.2	29.2		41.8	16.7	16.7	41.5	14.0	14.0
Incremental Delay (d_2), s/veh	0.6	0.4		0.4	3.9		2.9	3.2	3.4	74.0	1.8	1.8
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.1	27.8		35.6	33.1		44.7	20.0	20.1	115.5	15.8	15.9
Level of Service (LOS)	D	C		D	C		D	B	C	F	B	B
Approach Delay, s/veh / LOS	30.8	C		33.7	C		21.3	C		28.4	C	
Intersection Delay, s/veh / LOS	26.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.04	A	1.24	A	1.50	A	1.39	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Atlantic / Clara	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Interesction #15	File Name	15PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	55	203	71	102	200	92	67	709	121	107	888	72

Signal Information																								
Cycle, s	90.0	Reference Phase	2																					
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					
				Green	5.0	2.2	45.0	24.2	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0

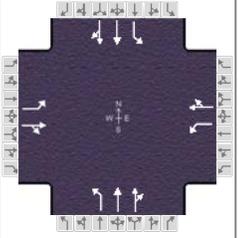
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.7		28.7	9.5	49.5	11.8	51.8
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		20.8		23.7	5.6		7.7	
Green Extension Time (g _e), s		1.0		0.5	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.84		0.95	
Max Out Probability		0.60		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	60	298		111	317		73	463	439	116	529	515
Adjusted Saturation Flow Rate (s), veh/h/ln	1079	1815		1099	1798		1810	1900	1803	1810	1900	1849
Queue Service Time (g _s), s	4.7	12.9		8.8	14.1		3.6	14.5	14.5	5.7	16.5	16.5
Cycle Queue Clearance Time (g _c), s	18.8	12.9		21.7	14.1		3.6	14.5	14.5	5.7	16.5	16.5
Green Ratio (g/C)	0.27	0.27		0.27	0.27		0.06	0.50	0.50	0.70	0.53	0.53
Capacity (c), veh/h	201	488		218	484		101	951	902	146	998	971
Volume-to-Capacity Ratio (X)	0.297	0.610		0.509	0.656		0.720	0.487	0.487	0.796	0.530	0.530
Back of Queue (Q), ft/ln (95 th percentile)	55.7	238.8		108.3	260.5		74.4	257.3	247.5	149	282.7	277.1
Back of Queue (Q), veh/ln (95 th percentile)	2.2	9.6		4.3	10.4		3.0	10.3	9.9	6.0	11.3	11.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	37.5	28.8		38.3	29.2		41.8	14.9	14.9	40.6	14.1	14.1
Incremental Delay (d ₂), s/veh	0.3	1.3		0.7	2.1		3.6	1.8	1.9	20.7	2.0	2.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.8	30.1		38.9	31.4		45.4	16.6	16.7	61.3	16.1	16.1
Level of Service (LOS)	D	C		D	C		D	B	B	E	B	B
Approach Delay, s/veh / LOS	31.4	C		33.3	C		18.8	B		20.6	C	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.08	A	1.19	A	1.29	A	1.44	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92		
Urban Street	Atlantic / Elizabeth	Analysis Year	2019	Analysis Period	1 > 7:15		
Intersection	Intersecion #16	File Name	16AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	129	130	50	88	82	135	30	865	97	83	774	96

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	2.4	47.1	23.7	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

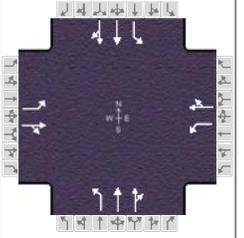
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.2		28.2	7.8	51.6	10.3	54.0
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.5		3.5	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		23.2		16.4	3.6		6.4	
Green Extension Time (g_e), s		0.5		1.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.56		0.90	
Max Out Probability		1.00		0.09	0.05		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	140	196		96	236		33	532	513	90	482	463
Adjusted Saturation Flow Rate (s), veh/h/ln	1163	1810		1206	1709		1810	1900	1832	1810	1900	1826
Queue Service Time (g_s), s	10.6	8.0		6.4	10.6		1.6	16.7	16.7	4.4	13.8	13.8
Cycle Queue Clearance Time (g_c), s	21.2	8.0		14.4	10.6		1.6	16.7	16.7	4.4	13.8	13.8
Green Ratio (g/C)	0.26	0.26		0.26	0.26		0.04	0.52	0.52	0.68	0.55	0.55
Capacity (c), veh/h	249	476		290	449		67	994	958	116	1045	1004
Volume-to-Capacity Ratio (X)	0.564	0.411		0.330	0.525		0.485	0.536	0.536	0.778	0.461	0.462
Back of Queue (Q), ft/ln (95 th percentile)	137.4	156.8		84.9	194.5		33	286.5	278.9	97.8	240.1	233.6
Back of Queue (Q), veh/ln (95 th percentile)	5.5	6.3		3.4	7.8		1.3	11.5	11.2	3.9	9.6	9.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	37.4	27.4		33.4	28.4		42.5	14.2	14.2	41.5	12.2	12.2
Incremental Delay (d_2), s/veh	1.0	0.2		0.2	0.4		2.0	2.1	2.1	7.6	1.5	1.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.4	27.6		33.6	28.7		44.5	16.3	16.4	49.1	13.7	13.7
Level of Service (LOS)	D	C		C	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	32.1	C		30.1	C		17.2	B		16.8	B	
Intersection Delay, s/veh / LOS	20.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.04	A	1.03	A	1.38	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Atlantic / Elizabeth	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Interesction #16	File Name	16PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	95	105	76	54	90	84	54	706	65	93	831	113

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		4.6	1.8	51.2	18.9	0.0	0.0				
		Yellow		3.5	0.0	3.5	3.5	0.0	0.0				
		Red		1.0	0.0	1.0	1.0	0.0	0.0				

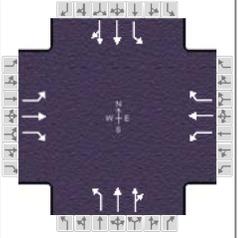
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		23.4		23.4	9.1	55.7	11.0	57.5
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		18.0		14.9	4.9		6.9	
Green Extension Time (g_e), s		0.9		1.0	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.77		0.92	
Max Out Probability		0.13		0.03	0.00		0.02	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	103	197		59	189		59	425	413	101	524	502
Adjusted Saturation Flow Rate (s), veh/h/ln	1213	1766		1205	1748		1810	1900	1843	1810	1900	1820
Queue Service Time (g_s), s	7.4	8.9		4.1	8.6		2.9	11.2	11.2	4.9	14.1	14.1
Cycle Queue Clearance Time (g_c), s	16.0	8.9		12.9	8.6		2.9	11.2	11.2	4.9	14.1	14.1
Green Ratio (g/C)	0.21	0.21		0.21	0.21		0.05	0.57	0.57	0.07	0.59	0.59
Capacity (c), veh/h	219	370		214	366		93	1081	1048	130	1119	1072
Volume-to-Capacity Ratio (X)	0.472	0.531		0.274	0.516		0.632	0.394	0.394	0.779	0.468	0.468
Back of Queue (Q), ft/ln (95 th percentile)	100.6	172.5		55	165		59.3	200.5	196.2	102.9	237.7	230.3
Back of Queue (Q), veh/ln (95 th percentile)	4.0	6.9		2.2	6.6		2.4	8.0	7.8	4.1	9.5	9.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	38.6	31.6		37.4	31.5		41.9	10.8	10.8	41.1	10.5	10.5
Incremental Delay (d_2), s/veh	0.6	0.4		0.3	0.4		2.6	1.1	1.1	3.8	1.4	1.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	32.1		37.6	31.9		44.5	11.9	11.9	44.9	11.9	12.0
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	34.5	C		33.3	C		14.0	B		14.9	B	
Intersection Delay, s/veh / LOS	18.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.98	A	0.90	A	1.23	A	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92		
Urban Street	Atlantic / Santa Ana		Analysis Year	2019	Analysis Period	1 > 7:15	
Intersection	Interesction #17	File Name	17AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	174	206	70	74	207	91	50	738	35	72	703	113

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.5	0.7	46.3	25.1	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

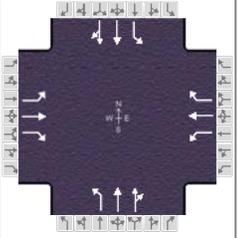
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		29.6		29.6	9.0	50.8	9.7	51.5
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		24.9		16.1	4.6		5.8	
Green Extension Time (g _e), s		0.2		1.6	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.74		0.86	
Max Out Probability		1.00		0.13	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	189	224	76	80	225	99	54	423	417	78	454	433
Adjusted Saturation Flow Rate (s), veh/h/ln	1174	1900	1610	1175	1900	1610	1810	1900	1869	1810	1900	1808
Queue Service Time (g _s), s	14.1	8.7	3.2	5.4	8.7	4.2	2.6	12.5	12.5	3.8	13.5	13.5
Cycle Queue Clearance Time (g _c), s	22.9	8.7	3.2	14.1	8.7	4.2	2.6	12.5	12.5	3.8	13.5	13.5
Green Ratio (g/C)	0.28	0.28	0.28	0.28	0.28	0.28	0.05	0.51	0.51	0.06	0.52	0.52
Capacity (c), veh/h	293	529	449	294	529	449	90	977	961	104	991	943
Volume-to-Capacity Ratio (X)	0.645	0.423	0.170	0.273	0.425	0.220	0.606	0.434	0.434	0.756	0.458	0.459
Back of Queue (Q), ft/ln (95 th percentile)	190.7	174.3	54.8	69.8	178	73.3	54.8	227.2	224.6	87.8	240.7	232.1
Back of Queue (Q), veh/ln (95 th percentile)	7.6	7.0	2.2	2.8	7.1	2.9	2.2	9.1	9.0	3.5	9.6	9.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	35.9	26.5	24.6	32.3	26.6	24.9	41.9	13.7	13.7	41.8	13.5	13.5
Incremental Delay (d ₂), s/veh	3.5	0.2	0.1	0.2	0.2	0.1	2.4	1.4	1.4	9.6	1.5	1.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.5	26.7	24.6	32.5	26.8	25.0	44.4	15.1	15.1	51.4	15.1	15.1
Level of Service (LOS)	D	C	C	C	C	C	D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.3	C		27.5	C		16.9	B		18.0	B	
Intersection Delay, s/veh / LOS	21.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.29	A	1.15	A	1.23	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 26, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Atlantic / Santa Ana		Analysis Year	2019	Analysis Period	1 > 16:30	
Intersection	Interesction #17	File Name	17PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	155	220	39	85	176	42	81	676	57	85	722	143

Signal Information				Signal Timing (s)								Signal Phases				
Cycle, s	90.0	Reference Phase	2													
Offset, s	0	Reference Point	End													
Uncoordinated	No	Simult. Gap E/W	On	Green	5.6	0.3	48.1	22.5	0.0	0.0						
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0						
				Red	1.0	0.0	1.0	1.0	0.0	0.0						

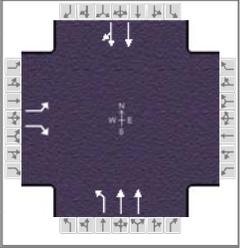
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		27.0		27.0	10.1	52.6	10.4	52.9
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.3		3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		21.7		18.4	6.3		6.5	
Green Extension Time (g_e), s		0.8		1.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.89		0.90	
Max Out Probability		0.82		0.23	0.93		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	168	239	42	92	191	46	88	404	393	92	484	456
Adjusted Saturation Flow Rate (s), veh/h/ln	1211	1900	1610	1159	1900	1610	1810	1900	1848	1810	1900	1790
Queue Service Time (g_s), s	12.1	9.7	1.8	6.7	7.6	2.0	4.3	11.3	11.3	4.5	14.2	14.2
Cycle Queue Clearance Time (g_c), s	19.7	9.7	1.8	16.4	7.6	2.0	4.3	11.3	11.3	4.5	14.2	14.2
Green Ratio (g/C)	0.25	0.25	0.25	0.25	0.25	0.25	0.56	0.53	0.53	0.68	0.54	0.54
Capacity (c), veh/h	281	475	403	245	475	403	113	1015	987	119	1021	962
Volume-to-Capacity Ratio (X)	0.599	0.503	0.105	0.377	0.403	0.113	0.776	0.398	0.398	0.778	0.474	0.474
Back of Queue (Q), ft/ln (95 th percentile)	162.3	195.2	31.2	85.9	155	34.1	90.6	206.9	202.8	94.8	248.7	238
Back of Queue (Q), veh/ln (95 th percentile)	6.5	7.8	1.2	3.4	6.2	1.4	3.6	8.3	8.1	3.8	9.9	9.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	36.3	28.9	26.0	36.0	28.1	26.0	41.6	12.4	12.4	41.4	12.9	12.9
Incremental Delay (d_2), s/veh	1.2	0.3	0.0	0.4	0.2	0.0	4.2	1.2	1.2	4.1	1.6	1.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.5	29.3	26.0	36.3	28.3	26.1	45.8	13.6	13.6	45.5	14.5	14.6
Level of Service (LOS)	D	C	C	D	C	C	D	B	B	D	B	B
Approach Delay, s/veh / LOS	32.0	C		30.3	C		16.8	B		17.3	B	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.23	A	1.03	A	1.22	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 27, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2019	Analysis Period	1 > 7:30
Intersection	Interesction #18	File Name	18AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	61		39				15	830			823	36

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	2.0	68.5	6.0	0.0	0.0	0.0					
	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
	Red	1.0	1.0	1.0	0.0	0.0	0.0					

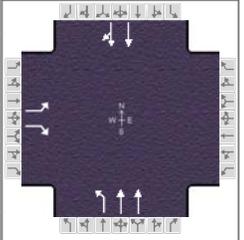
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			6.5	79.5		73.0
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.3			3.1	0.0		0.0
Queue Clearance Time (g _s), s		5.2			2.8			
Green Extension Time (g _e), s		0.2			0.0	0.0		0.0
Phase Call Probability		1.00			0.33			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2		6		16
Adjusted Flow Rate (v), veh/h	66		42				16	902		470		463
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809		1900		1872
Queue Service Time (g _s), s	3.2		2.3				0.8	5.0		15.0		7.1
Cycle Queue Clearance Time (g _c), s	3.2		2.3				0.8	5.0		15.0		7.1
Green Ratio (g/C)	0.07		0.07				0.31	0.83		0.76		0.76
Capacity (c), veh/h	121		107				40	3015		1446		1424
Volume-to-Capacity Ratio (X)	0.550		0.395				0.404	0.299		0.325		0.325
Back of Queue (Q), ft/ln (95 th percentile)	66.2		41.6				17	33.6		92		90.8
Back of Queue (Q), veh/ln (95 th percentile)	2.6		1.7				0.7	1.3		3.7		3.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	40.7		40.3				43.4	1.7		3.4		3.4
Incremental Delay (d ₂), s/veh	1.4		0.9				2.4	0.3		0.6		0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	42.1		41.1				45.8	1.9		4.0		4.0
Level of Service (LOS)	D		D				D	A		A		A
Approach Delay, s/veh / LOS	41.7		D	0.0			2.7	A		4.0		A
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.25	A	1.26	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 27, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Interesction #18	File Name	18PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	24		34				34	776			851	21

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.6	66.9	6.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

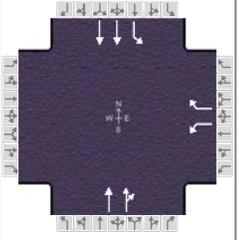
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8			1	6		2
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			8.1	79.5		71.4
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.4			3.1	0.0		0.0
Queue Clearance Time (g _s), s		4.0			3.8			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			0.60			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3		18				1	6		2		12
Adjusted Flow Rate (v), veh/h	26		37				37	843		476		472
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809		1900		1884
Queue Service Time (g _s), s	1.2		2.0				1.8	4.6		15.2		7.7
Cycle Queue Clearance Time (g _c), s	1.2		2.0				1.8	4.6		15.2		7.7
Green Ratio (g/C)	0.07		0.07				0.66	0.83		0.74		0.74
Capacity (c), veh/h	121		107				73	3015		1412		1400
Volume-to-Capacity Ratio (X)	0.216		0.344				0.508	0.280		0.337		0.337
Back of Queue (Q), ft/ln (95 th percentile)	25.1		36.1				37.3	30.7		106.6		105.8
Back of Queue (Q), veh/ln (95 th percentile)	1.0		1.4				1.5	1.2		4.3		4.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00		0.00		0.00
Uniform Delay (d ₁), s/veh	39.8		40.1				42.3	1.6		4.0		4.0
Incremental Delay (d ₂), s/veh	0.3		0.7				2.0	0.2		0.6		0.7
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0		0.0		0.0
Control Delay (d), s/veh	40.1		40.8				44.3	1.9		4.6		4.6
Level of Service (LOS)	D		D				D	A		A		A
Approach Delay, s/veh / LOS	40.5		D	0.0			3.6	A		4.6		A
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.21	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 27, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing - AM	PHF	0.92
Urban Street	Atlantic / S. Cecilia	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Interesction #19	File Name	19AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				90		68		786	44	60	788	

Signal Information				Signal Timing						Signal Phases					
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.8	64.6	7.1	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					

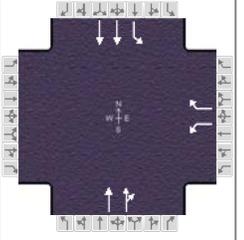
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				11.6		69.1	9.3	78.4
Change Period, ($Y+R_c$), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.4		0.0	3.1	0.0
Queue Clearance Time (g_s), s				6.7			2.7	
Green Extension Time (g_e), s				0.3		0.0	0.1	0.0
Phase Call Probability				1.00			0.80	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				98		74		455	447	65		857
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1864	1810		1809
Queue Service Time (g_s), s				4.7		4.0		14.3	8.0	0.7		5.0
Cycle Queue Clearance Time (g_c), s				4.7		4.0		14.3	8.0	0.7		5.0
Green Ratio (g/C)				0.08		0.08		0.72	0.72	0.79		0.82
Capacity (c), veh/h				142		126		1364	1338	528		2972
Volume-to-Capacity Ratio (X)				0.690		0.586		0.334	0.334	0.124		0.288
Back of Queue (Q), ft/ln (95 th percentile)				98.7		73.5		117.1	115.1	6.3		38.8
Back of Queue (Q), veh/ln (95 th percentile)				3.9		2.9		4.7	4.6	0.3		1.6
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d_1), s/veh				40.4		40.1		4.7	4.7	3.6		1.9
Incremental Delay (d_2), s/veh				2.2		1.6		0.7	0.7	0.0		0.2
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				42.6		41.7		5.4	5.4	3.7		2.1
Level of Service (LOS)				D		D		A	A	A		A
Approach Delay, s/veh / LOS	0.0			42.2		D		5.4	A	2.2		A
Intersection Delay, s/veh / LOS				7.1						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.85	B	0.61	A
Bicycle LOS Score / LOS				F	1.23	A	1.25	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 27, 2019	Area Type	Other		
Jurisdiction	City of Cudahy	Time Period	Existing - PM	PHF	0.92		
Urban Street	Atlantic / S. Cecilia	Analysis Year	2019	Analysis Period	1 > 16:45		
Intersection	Interesction #19	File Name	19PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h				76		44		752	42	49	828	

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.4	65.9	6.2	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

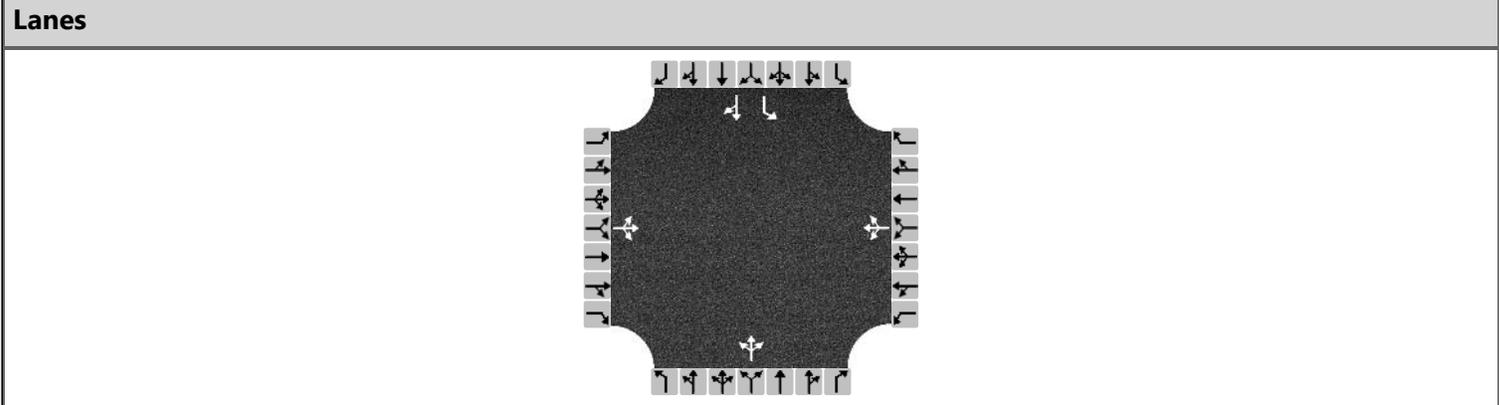
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				10.7		70.4	8.9	79.3
Change Period, ($Y+R_c$), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.3		0.0	3.1	0.0
Queue Clearance Time (g_s), s				6.0			2.5	
Green Extension Time (g_e), s				0.2		0.0	0.1	0.0
Phase Call Probability				1.00			0.74	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5	2	
Adjusted Flow Rate (v), veh/h				83		48		436	427	53	900	
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1864	1810	1809	
Queue Service Time (g_s), s				4.0		2.6		13.5	7.2	0.5	5.0	
Cycle Queue Clearance Time (g_c), s				4.0		2.6		13.5	7.2	0.5	5.0	
Green Ratio (g/C)				0.07		0.07		0.73	0.73	0.80	0.83	
Capacity (c), veh/h				125		111		1390	1364	547	3005	
Volume-to-Capacity Ratio (X)				0.659		0.429		0.313	0.313	0.097	0.299	
Back of Queue (Q), ft/ln (95 th percentile)				83.7		47		101.7	100	4.5	35.2	
Back of Queue (Q), veh/ln (95 th percentile)				3.3		1.9		4.1	4.0	0.2	1.4	
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh				40.8		40.2		4.2	4.2	3.3	1.7	
Incremental Delay (d_2), s/veh				2.2		1.0		0.6	0.6	0.0	0.3	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				43.0		41.1		4.8	4.8	3.3	2.0	
Level of Service (LOS)				D		D		A	A	A	A	
Approach Delay, s/veh / LOS	0.0			42.4		D		4.8	A	2.0	A	
Intersection Delay, s/veh / LOS				6.0						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.84	B	0.61	A
Bicycle LOS Score / LOS				F	1.20	A	1.27	A

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/3/2019	East/West Street	Elizabeth Street
Analysis Year	2019	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Existing - AM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	3	49	0	68	67	74	1	264	102	64	262	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	57			227			399			70 289		
Percent Heavy Vehicles	2			2			2			2 2		

Departure Headway and Service Time

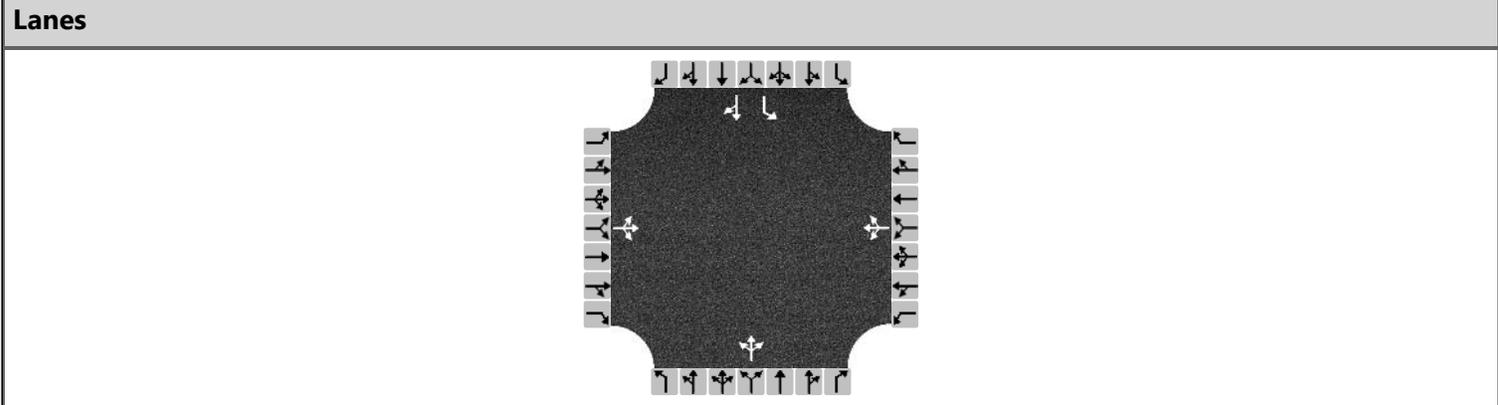
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.050			0.202			0.355			0.062	0.257	
Final Departure Headway, hd (s)	6.48			5.88			5.32			6.45	5.93	
Final Degree of Utilization, x	0.102			0.371			0.590			0.125	0.476	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	4.48			3.88			3.32			4.15	3.63	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	57			227			399			70	289	
Capacity	556			612			676			558	607	
95% Queue Length, Q ₉₅ (veh)	0.3			1.7			3.9			0.4	2.6	
Control Delay (s/veh)	10.2			12.3			15.7			10.1	13.9	
Level of Service, LOS	B			B			C			B	B	
Approach Delay (s/veh)	10.2			12.3			15.7			13.2		
Approach LOS	B			B			C			B		
Intersection Delay, s/veh LOS	13.8						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/3/2019	East/West Street	Elizabeth Street
Analysis Year	2019	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Existing - PM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	4	62	0	80	67	43	0	314	80	44	327	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	72			207			428			48 360		
Percent Heavy Vehicles	2			2			2			2 2		

Departure Headway and Service Time

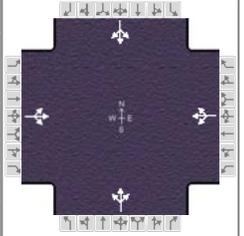
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.064			0.184			0.381			0.043	0.320	
Final Departure Headway, hd (s)	6.76			6.29			5.51			6.55	6.04	
Final Degree of Utilization, x	0.135			0.361			0.656			0.087	0.603	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	4.76			4.29			3.51			4.25	3.74	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	72			207			428			48	360	
Capacity	532			572			653			549	596	
95% Queue Length, Q ₉₅ (veh)	0.5			1.6			4.9			0.3	4.0	
Control Delay (s/veh)	10.8			12.8			18.4			9.9	17.5	
Level of Service, LOS	B			B			C			A	C	
Approach Delay (s/veh)	10.8			12.8			18.4			16.6		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	16.2						C					

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Live Oak	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #8	File Name	08AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	60	30	52	56	82	28	448	62	67	417	18

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	67.5	13.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

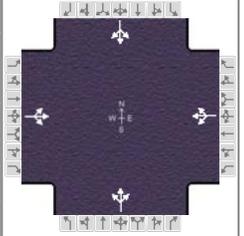
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		18.0		18.0		72.0		72.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.4		3.4		0.0		0.0
Queue Clearance Time (g _s), s		7.8		12.9				
Green Extension Time (g _e), s		0.7		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	126			207			585			546		
Adjusted Saturation Flow Rate (s), veh/h/ln	1727			1646			1810			1680		
Queue Service Time (g _s), s	0.0			5.1			0.0			0.0		
Cycle Queue Clearance Time (g _c), s	5.8			10.9			10.3			9.1		
Green Ratio (g/C)	0.15			0.15			0.75			0.75		
Capacity (c), veh/h	308			297			1400			1306		
Volume-to-Capacity Ratio (X)	0.410			0.695			0.418			0.418		
Back of Queue (Q), ft/ln (95 th percentile)	114.7			198.6			153.5			139.6		
Back of Queue (Q), veh/ln (95 th percentile)	4.6			7.9			6.1			5.6		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	35.0			37.0			4.1			3.9		
Incremental Delay (d ₂), s/veh	0.3			1.1			0.9			1.0		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	35.3			38.1			5.0			4.9		
Level of Service (LOS)	D			D			A			A		
Approach Delay, s/veh / LOS	35.3	D		38.1	D		5.0	A		4.9	A	
Intersection Delay, s/veh / LOS	12.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.71	B	1.61	B	1.61	B
Bicycle LOS Score / LOS	0.70	A	0.83	A	1.45	A	1.39	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Live Oak	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #8	File Name	08PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	13	57	18	41	42	45	20	306	47	49	353	22

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	71.3	9.7	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0		
				Red	1.0	1.0	0.0	0.0	0.0	0.0		

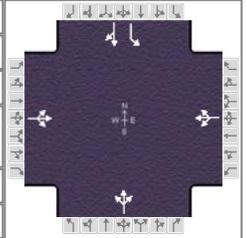
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		14.2		14.2		75.8		75.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g _s), s		6.4		9.3				
Green Extension Time (g _e), s		0.4		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	96			139			405			461		
Adjusted Saturation Flow Rate (s), veh/h/ln	1791			1648			1809			1748		
Queue Service Time (g _s), s	0.0			2.9			0.0			0.0		
Cycle Queue Clearance Time (g _c), s	4.4			7.3			5.2			6.1		
Green Ratio (g/C)	0.11			0.11			0.79			0.79		
Capacity (c), veh/h	238			230			1476			1430		
Volume-to-Capacity Ratio (X)	0.401			0.605			0.275			0.322		
Back of Queue (Q), ft/ln (95 th percentile)	88.5			133.9			56.7			67.7		
Back of Queue (Q), veh/ln (95 th percentile)	3.5			5.4			2.3			2.7		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	37.8			39.0			2.5			2.6		
Incremental Delay (d ₂), s/veh	0.4			1.0			0.5			0.6		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	38.2			40.0			2.9			3.2		
Level of Service (LOS)	D			D			A			A		
Approach Delay, s/veh / LOS	38.2	D		40.0	D		2.9	A		3.2	A	
Intersection Delay, s/veh / LOS	10.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.72	B	1.72	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.65	A	0.72	A	1.16	A	1.25	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #9	File Name	09AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	108	14	173	107	123	6	333	162	77	343	14

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	55.5	25.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

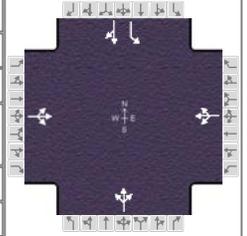
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.6		27.5				
Green Extension Time (g _e), s		1.3		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	150			438			545			84 388		
Adjusted Saturation Flow Rate (s), veh/h/ln	1776			1523			1791			881 1887		
Queue Service Time (g _s), s	0.0			19.9			0.0			5.2 8.9		
Cycle Queue Clearance Time (g _c), s	5.6			25.5			15.0			20.2 8.9		
Green Ratio (g/C)	0.28			0.28			0.62			0.62 0.62		
Capacity (c), veh/h	548			489			1145			476 1163		
Volume-to-Capacity Ratio (X)	0.274			0.896			0.476			0.176 0.334		
Back of Queue (Q), ft/ln (95 th percentile)	110.9			437.7			245.5			51 163.1		
Back of Queue (Q), veh/ln (95 th percentile)	4.4			17.5			9.8			2.0 6.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	25.1			32.3			9.5			15.1 8.3		
Incremental Delay (d ₂), s/veh	0.1			18.4			1.4			0.8 0.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	25.2			50.7			10.9			15.9 9.1		
Level of Service (LOS)	C			D			B			B A		
Approach Delay, s/veh / LOS	25.2	C		50.7	D		10.9	B		10.3	B	
Intersection Delay, s/veh / LOS	22.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.92	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.74	A	1.21	A	1.39	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #9	File Name	09PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	11	115	6	127	91	63	5	280	122	76	307	22

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	61.1	19.9	0.0	0.0	0.0	0.0					
	Yellow	3.5	3.5	0.0	0.0	0.0	0.0					
	Red	1.0	1.0	0.0	0.0	0.0	0.0					

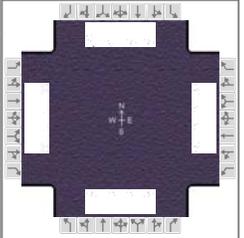
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		24.4		24.4		65.6		65.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.8		19.3				
Green Extension Time (g _e), s		0.9		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.18				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	143			305			442			83 358		
Adjusted Saturation Flow Rate (s), veh/h/ln	1854			1536			1798			967 1877		
Queue Service Time (g _s), s	0.0			11.6			0.0			3.6 6.8		
Cycle Queue Clearance Time (g _c), s	5.8			17.3			9.4			13.0 6.8		
Green Ratio (g/C)	0.22			0.22			0.68			0.68 0.68		
Capacity (c), veh/h	454			398			1261			635 1274		
Volume-to-Capacity Ratio (X)	0.316			0.767			0.351			0.130 0.281		
Back of Queue (Q), ft/ln (95 th percentile)	116.7			279.1			154.2			35.8 115.6		
Back of Queue (Q), veh/ln (95 th percentile)	4.7			11.2			6.2			1.4 4.6		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	29.5			33.9			6.2			8.9 5.7		
Incremental Delay (d ₂), s/veh	0.1			4.3			0.8			0.4 0.6		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	29.7			38.2			6.9			9.3 6.3		
Level of Service (LOS)	C			D			A			A A		
Approach Delay, s/veh / LOS	29.7	C		38.2	D		6.9	A		6.9	A	
Intersection Delay, s/veh / LOS	16.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.93	B	1.63	B	1.63	B
Bicycle LOS Score / LOS	0.72	A	0.99	A	1.22	A	1.21	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	171	851	216	190	965	97	163	813	129	141	659	78

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		10.9	30.5	5.9	2.6	22.1	0.0				
		Yellow		3.5	3.5	3.5	0.0	3.5	0.0				
		Red		1.0	1.0	1.0	0.0	1.0	0.0				

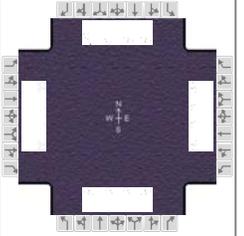
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.4	35.0	15.4	35.0	13.0	29.3	10.4	26.6
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	11.1		12.2		10.5	23.1	5.8	20.6
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.6	0.1	1.6
Phase Call Probability	0.99		0.99		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	186	925	235	207	1049	105	177	884	140	153	408	393
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1829
Queue Service Time (g _s), s	9.1	20.4	10.2	10.2	24.3	4.2	8.5	21.1	5.2	3.8	18.6	18.6
Cycle Queue Clearance Time (g _c), s	9.1	20.4	10.2	10.2	24.3	4.2	8.5	21.1	5.2	3.8	18.6	18.6
Green Ratio (g/C)	0.12	0.34	0.34	0.12	0.34	0.34	0.09	0.28	0.40	0.07	0.25	0.25
Capacity (c), veh/h	218	1226	546	218	1226	546	171	996	637	229	468	450
Volume-to-Capacity Ratio (X)	0.852	0.754	0.430	0.947	0.856	0.193	1.037	0.887	0.220	0.669	0.872	0.873
Back of Queue (Q), ft/ln (95 th percentile)	231.3	350	182.6	288.8	418.1	73.3	301.5	378.6	83.2	74.9	380.5	371.2
Back of Queue (Q), veh/ln (95 th percentile)	9.3	14.0	7.3	11.6	16.7	2.9	12.1	15.1	3.3	3.0	15.2	14.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.8	26.4	23.0	39.3	27.7	21.0	40.8	31.3	18.0	41.1	32.6	32.6
Incremental Delay (d ₂), s/veh	25.1	4.3	2.5	45.6	7.8	0.8	78.8	8.6	0.1	1.3	14.2	14.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	63.9	30.8	25.5	84.9	35.5	21.8	119.6	39.9	18.1	42.4	46.8	47.4
Level of Service (LOS)	E	C	C	F	D	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	34.4	C		41.9	D		49.1	D		46.3	D	
Intersection Delay, s/veh / LOS	42.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.60	B	1.61	B	1.48	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	114	841	140	170	743	136	147	564	123	198	694	77

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	7.7	2.8	30.5	7.4	1.1	22.5						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

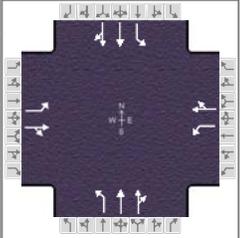
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	12.2	35.0	15.0	37.8	13.0	28.1	11.9	27.0
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	8.0		11.0		9.9	15.5	7.4	21.5
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.1	1.0
Phase Call Probability	0.95		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.28	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	124	914	152	185	808	148	160	613	134	215	426	412
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1833
Queue Service Time (g _s), s	6.0	20.1	6.2	9.0	16.3	5.7	7.9	13.5	5.1	5.4	19.5	19.5
Cycle Queue Clearance Time (g _c), s	6.0	20.1	6.2	9.0	16.3	5.7	7.9	13.5	5.1	5.4	19.5	19.5
Green Ratio (g/C)	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.26	0.38	0.08	0.25	0.25
Capacity (c), veh/h	155	1226	546	211	1337	595	171	949	610	289	476	459
Volume-to-Capacity Ratio (X)	0.798	0.746	0.279	0.877	0.604	0.248	0.935	0.646	0.219	0.744	0.897	0.897
Back of Queue (Q), ft/ln (95 th percentile)	137.6	345.1	109.9	240	282.2	100	242.8	243.4	81.9	113.2	408.5	399.3
Back of Queue (Q), veh/ln (95 th percentile)	5.5	13.8	4.4	9.6	11.3	4.0	9.7	9.7	3.3	4.5	16.3	16.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.4	26.3	21.7	39.1	23.0	19.7	40.5	29.5	18.9	40.4	32.6	32.6
Incremental Delay (d ₂), s/veh	10.0	4.2	1.3	30.5	2.0	1.0	49.5	1.0	0.1	6.1	17.7	18.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.4	30.5	23.0	69.6	25.1	20.7	90.0	30.5	19.0	46.4	50.3	50.9
Level of Service (LOS)	D	C	C	E	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	31.6	C		31.7	C		39.3	D		49.7	D	
Intersection Delay, s/veh / LOS	37.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.47	A	1.43	A	1.24	A	1.36	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Live Oak	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersecion #14	File Name	14AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	172	71	99	143	58	56	957	137	70	807	65

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.7	0.4	48.9	22.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

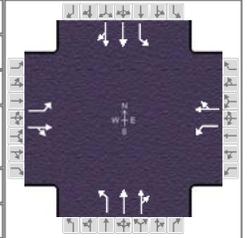
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		27.0		27.0	9.2	53.4	9.6	53.8
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		16.2		21.8	5.0		5.7	
Green Extension Time (g _e), s		1.2		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.78		0.85	
Max Out Probability		0.08		0.89	0.11		0.40	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	72	264		108	218		61	607	582	76	480	468
Adjusted Saturation Flow Rate (s), veh/h/ln	1181	1805		1133	1806		1810	1900	1816	1810	1900	1850
Queue Service Time (g _s), s	5.0	11.6		8.3	9.3		3.0	19.3	19.4	3.7	13.8	13.8
Cycle Queue Clearance Time (g _c), s	14.2	11.6		19.8	9.3		3.0	19.3	19.4	3.7	13.8	13.8
Green Ratio (g/C)	0.25	0.25		0.25	0.25		0.05	0.54	0.54	0.06	0.55	0.55
Capacity (c), veh/h	254	452		218	452		94	1032	986	103	1041	1013
Volume-to-Capacity Ratio (X)	0.282	0.585		0.493	0.483		0.645	0.589	0.590	0.741	0.462	0.462
Back of Queue (Q), ft/ln (95 th percentile)	64.8	218.5		104.9	181.4		61.6	320.1	310.7	78.1	240.7	236
Back of Queue (Q), veh/ln (95 th percentile)	2.6	8.7		4.2	7.3		2.5	12.8	12.4	3.1	9.6	9.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	34.8	29.6		38.3	28.8		41.8	13.8	13.8	41.8	12.3	12.3
Incremental Delay (d ₂), s/veh	0.2	0.6		0.6	0.3		2.7	2.5	2.6	3.9	1.5	1.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	35.1	30.3		39.0	29.1		44.6	16.3	16.4	45.7	13.8	13.8
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.3	C		32.3	C		17.7	B		16.2	B	
Intersection Delay, s/veh / LOS	20.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.04	A	1.03	A	1.52	B	1.33	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Live Oak	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #14	File Name	14PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	53	118	43	138	98	50	35	676	106	65	867	68

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	1.3	50.8	20.7	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

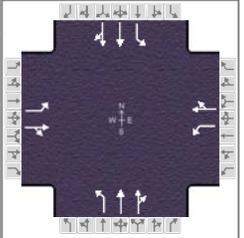
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.2		25.2	8.2	55.3	9.5	56.6
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		12.5		20.0	3.9		5.5	
Green Extension Time (g _e), s		1.1		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.61		0.83	
Max Out Probability		0.01		0.34	0.00		0.02	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	58	175		150	161		38	435	415	71	515	502
Adjusted Saturation Flow Rate (s), veh/h/ln	1245	1813		1229	1791		1810	1900	1810	1810	1900	1851
Queue Service Time (g _s), s	3.7	7.4		10.7	6.8		1.9	11.6	11.7	3.5	14.1	14.1
Cycle Queue Clearance Time (g _c), s	10.5	7.4		18.0	6.8		1.9	11.6	11.7	3.5	14.1	14.1
Green Ratio (g/C)	0.23	0.23		0.23	0.23		0.04	0.56	0.56	0.06	0.58	0.58
Capacity (c), veh/h	273	418		263	413		74	1072	1021	100	1100	1071
Volume-to-Capacity Ratio (X)	0.211	0.419		0.571	0.390		0.514	0.406	0.406	0.706	0.468	0.468
Back of Queue (Q), ft/ln (95 th percentile)	50.7	145.7		145.6	132.9		38.4	207.8	200.7	72.2	239.9	235.3
Back of Queue (Q), veh/ln (95 th percentile)	2.0	5.8		5.8	5.3		1.5	8.3	8.0	2.9	9.6	9.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	33.7	29.5		37.2	29.3		42.3	11.1	11.1	41.8	11.0	11.0
Incremental Delay (d ₂), s/veh	0.1	0.2		0.7	0.2		2.0	1.1	1.2	3.4	1.4	1.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	33.8	29.8		37.9	29.5		44.3	12.2	12.3	45.2	12.4	12.4
Level of Service (LOS)	C	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	30.8	C		33.6	C		13.6	B		14.5	B	
Intersection Delay, s/veh / LOS	18.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.87	A	1.00	A	1.22	A	1.38	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersecion #15	File Name	15AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	110	144	108	97	212	132	68	928	141	126	777	136

Signal Information				Signal Phases													
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
		Green	5.1	1.4	44.5	25.5	0.0	0.0									
		Yellow	3.5	0.0	3.5	3.5	0.0	0.0									
		Red	1.0	0.0	1.0	1.0	0.0	0.0									

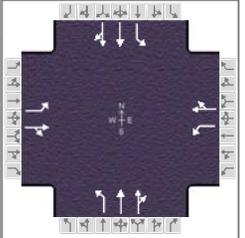
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	9.6	49.0	11.0	50.4
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		27.5		21.8	5.6		8.5	
Green Extension Time (g _e), s		0.0		1.0	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.84		0.97	
Max Out Probability		1.00		0.91	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	120	274		105	374		74	594	568	137	509	483
Adjusted Saturation Flow Rate (s), veh/h/ln	1025	1764		1123	1777		1810	1900	1812	1810	1900	1801
Queue Service Time (g _s), s	8.3	11.9		7.9	17.2		3.6	20.7	20.8	6.5	16.1	16.1
Cycle Queue Clearance Time (g _c), s	25.5	11.9		19.8	17.2		3.6	20.7	20.8	6.5	16.1	16.1
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.06	0.49	0.49	0.07	0.51	0.51
Capacity (c), veh/h	175	500		250	504		102	939	896	131	970	919
Volume-to-Capacity Ratio (X)	0.685	0.548		0.421	0.743		0.727	0.633	0.634	1.048	0.525	0.525
Back of Queue (Q), ft/ln (95 th percentile)	138.1	215.7		98.4	314.2		82.3	350.6	339	260.1	280.3	269.4
Back of Queue (Q), veh/ln (95 th percentile)	5.5	8.6		3.9	12.6		3.3	14.0	13.6	10.4	11.2	10.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	41.7	27.4		35.7	29.3		41.8	16.7	16.7	41.8	14.7	14.7
Incremental Delay (d ₂), s/veh	8.8	0.7		0.4	5.2		8.8	3.2	3.4	92.1	2.0	2.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.5	28.1		36.2	34.5		50.6	20.0	20.2	133.9	16.8	16.9
Level of Service (LOS)	D	C		D	C		D	B	C	F	B	B
Approach Delay, s/veh / LOS	34.9	C		34.8	C		21.9	C		31.0	C	
Intersection Delay, s/veh / LOS	28.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.14	A	1.28	A	1.51	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #15	File Name	15PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	63	207	71	102	205	92	70	709	121	107	888	81

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.1	2.2	44.8	24.4	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

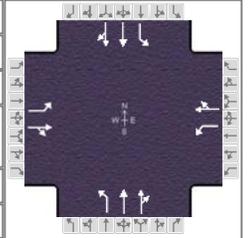
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.9		28.9	9.6	49.3	11.8	51.5
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		21.8		24.0	5.7		7.7	
Green Extension Time (g _e), s		0.9		0.4	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.85		0.95	
Max Out Probability		0.88		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	68	302		111	323		76	463	439	116	535	519
Adjusted Saturation Flow Rate (s), veh/h/ln	1074	1816		1094	1800		1810	1900	1803	1810	1900	1844
Queue Service Time (g _s), s	5.4	13.1		8.9	14.3		3.7	14.5	14.5	5.7	16.8	16.8
Cycle Queue Clearance Time (g _c), s	19.8	13.1		22.0	14.3		3.7	14.5	14.5	5.7	16.8	16.8
Green Ratio (g/C)	0.27	0.27		0.27	0.27		0.06	0.50	0.50	0.08	0.52	0.52
Capacity (c), veh/h	200	492		217	488		103	947	898	146	992	963
Volume-to-Capacity Ratio (X)	0.343	0.614		0.510	0.662		0.741	0.489	0.489	0.796	0.539	0.539
Back of Queue (Q), ft/ln (95 th percentile)	64.5	242.2		108.3	265		78.1	258.7	248.9	150.9	288.1	281.7
Back of Queue (Q), veh/ln (95 th percentile)	2.6	9.7		4.3	10.6		3.1	10.3	10.0	6.0	11.5	11.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	37.9	28.7		38.3	29.1		41.8	15.0	15.0	40.6	14.3	14.3
Incremental Delay (d ₂), s/veh	0.4	1.4		0.7	2.3		3.9	1.8	1.9	21.7	2.1	2.2
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.3	30.1		39.0	31.5		45.7	16.8	16.9	62.4	16.4	16.4
Level of Service (LOS)	D	C		D	C		D	B	B	E	B	B
Approach Delay, s/veh / LOS	31.6	C		33.4	C		19.1	B		21.0	C	
Intersection Delay, s/veh / LOS	23.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.10	A	1.20	A	1.29	A	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersecion #16	File Name	16AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	129	139	50	88	82	145	30	865	97	83	774	96

Signal Information				Signal Phases											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	3.3	2.4	46.5	24.2	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0					

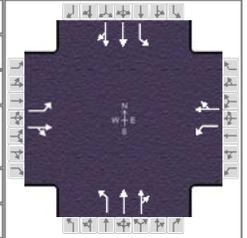
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.7		28.7	7.8	51.0	10.3	53.5
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.5		3.5	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		23.8		16.8	3.6		6.4	
Green Extension Time (g _e), s		0.4		1.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.56		0.90	
Max Out Probability		1.00		0.12	0.13		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	140	205		96	247		33	532	513	90	482	463
Adjusted Saturation Flow Rate (s), veh/h/ln	1151	1814		1195	1704		1810	1900	1832	1810	1900	1826
Queue Service Time (g _s), s	10.7	8.4		6.5	11.1		1.6	16.9	16.9	4.4	14.0	14.0
Cycle Queue Clearance Time (g _c), s	21.8	8.4		14.8	11.1		1.6	16.9	16.9	4.4	14.0	14.0
Green Ratio (g/C)	0.27	0.27		0.27	0.27		0.04	0.52	0.52	0.06	0.54	0.54
Capacity (c), veh/h	247	488		290	458		67	983	948	116	1034	993
Volume-to-Capacity Ratio (X)	0.567	0.421		0.330	0.539		0.485	0.542	0.542	0.779	0.467	0.467
Back of Queue (Q), ft/ln (95 th percentile)	138.5	164.1		84.9	201.8		33	290.3	282.6	102.3	243.5	236.5
Back of Queue (Q), veh/ln (95 th percentile)	5.5	6.6		3.4	8.1		1.3	11.6	11.3	4.1	9.7	9.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	37.4	27.1		33.2	28.1		42.5	14.6	14.6	41.5	12.5	12.5
Incremental Delay (d ₂), s/veh	1.3	0.2		0.2	0.5		2.0	2.1	2.2	10.8	1.5	1.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.8	27.3		33.5	28.6		44.5	16.7	16.8	52.3	14.1	14.1
Level of Service (LOS)	D	C		C	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	32.0	C		30.0	C		17.6	B		17.4	B	
Intersection Delay, s/veh / LOS	20.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.06	A	1.05	A	1.38	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #16	File Name	16PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	95	107	76	54	90	87	54	706	65	93	831	113

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	4.6	1.8	51.0	19.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

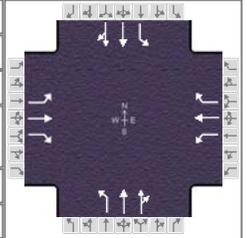
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		23.5		23.5	9.1	55.5	10.9	57.3
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		18.2		15.0	4.9		6.9	
Green Extension Time (g _e), s		0.9		1.0	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.77		0.92	
Max Out Probability		0.14		0.03	0.00		0.02	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	103	199		59	192		59	425	413	101	524	502
Adjusted Saturation Flow Rate (s), veh/h/ln	1210	1768		1202	1746		1810	1900	1843	1810	1900	1820
Queue Service Time (g _s), s	7.4	9.0		4.1	8.8		2.9	11.2	11.3	4.9	14.2	14.2
Cycle Queue Clearance Time (g _c), s	16.2	9.0		13.0	8.8		2.9	11.2	11.3	4.9	14.2	14.2
Green Ratio (g/C)	0.21	0.21		0.21	0.21		0.05	0.57	0.57	0.07	0.59	0.59
Capacity (c), veh/h	219	374		215	369		93	1077	1045	130	1116	1068
Volume-to-Capacity Ratio (X)	0.472	0.532		0.273	0.521		0.632	0.395	0.395	0.780	0.470	0.470
Back of Queue (Q), ft/ln (95 th percentile)	100.5	173.9		54.9	167.9		59.3	201.3	197.1	102.9	239.3	231.9
Back of Queue (Q), veh/ln (95 th percentile)	4.0	7.0		2.2	6.7		2.4	8.1	7.9	4.1	9.6	9.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.6	31.5		37.3	31.4		41.9	10.9	10.9	41.1	10.6	10.6
Incremental Delay (d ₂), s/veh	0.6	0.4		0.3	0.4		2.6	1.1	1.1	3.8	1.4	1.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.2	32.0		37.5	31.9		44.5	12.0	12.0	44.9	12.0	12.1
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	34.4	C		33.2	C		14.1	B		15.0	B	
Intersection Delay, s/veh / LOS	18.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.99	A	0.90	A	1.23	A	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersecion #17	File Name	17AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	174	215	97	74	217	91	81	738	35	72	703	113

Signal Information				Signal Timing (s)																				
Cycle, s	90.0	Reference Phase	2	Green	5.2	0.5	45.4	25.5	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

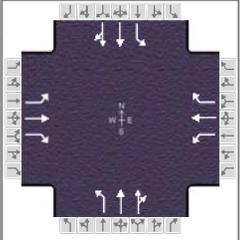
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	10.1	50.4	9.7	49.9
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		25.5		16.5	6.3		5.8	
Green Extension Time (g _e), s		0.0		1.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.89		0.86	
Max Out Probability		1.00		0.16	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	189	234	105	80	236	99	88	423	417	78	454	433
Adjusted Saturation Flow Rate (s), veh/h/ln	1163	1900	1610	1165	1900	1610	1810	1900	1869	1810	1900	1808
Queue Service Time (g _s), s	14.3	9.0	4.5	5.5	9.1	4.2	4.3	12.7	12.7	3.8	14.0	14.0
Cycle Queue Clearance Time (g _c), s	23.5	9.0	4.5	14.5	9.1	4.2	4.3	12.7	12.7	3.8	14.0	14.0
Green Ratio (g/C)	0.28	0.28	0.28	0.28	0.28	0.28	0.06	0.51	0.51	0.06	0.50	0.50
Capacity (c), veh/h	291	538	456	293	538	456	113	968	953	104	959	912
Volume-to-Capacity Ratio (X)	0.650	0.435	0.231	0.275	0.439	0.217	0.779	0.437	0.437	0.756	0.474	0.474
Back of Queue (Q), ft/ln (95 th percentile)	192.1	181.9	76.7	69.8	186.3	72.7	111	229.4	226.7	91.4	250.1	241.1
Back of Queue (Q), veh/ln (95 th percentile)	7.7	7.3	3.1	2.8	7.5	2.9	4.4	9.2	9.1	3.7	10.0	9.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	36.0	26.4	24.8	32.3	26.4	24.6	41.6	13.9	13.9	41.8	14.5	14.5
Incremental Delay (d ₂), s/veh	4.0	0.2	0.1	0.2	0.2	0.1	18.7	1.4	1.5	12.4	1.7	1.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.0	26.6	24.8	32.5	26.6	24.7	60.3	15.4	15.4	54.2	16.2	16.3
Level of Service (LOS)	D	C	C	C	C	C	E	B	B	D	B	B
Approach Delay, s/veh / LOS	31.0	C		27.3	C		19.6	B		19.3	B	
Intersection Delay, s/veh / LOS	22.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.36	A	1.17	A	1.25	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Santa Ana	Analysis Year	2019	Analysis Period	1 > 16:30
Intersection	Intersecion #17	File Name	17PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	155	222	45	85	179	42	89	676	57	85	722	143

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.9	0.3	47.7	22.7	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

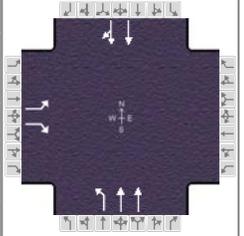
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		27.2		27.2	10.7	52.4	10.4	52.2
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.3		3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		21.8		18.5	6.7		6.5	
Green Extension Time (g _e), s		0.8		1.2	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.91		0.90	
Max Out Probability		0.88		0.24	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	168	241	49	92	195	46	97	404	393	92	484	456
Adjusted Saturation Flow Rate (s), veh/h/ln	1207	1900	1610	1157	1900	1610	1810	1900	1848	1810	1900	1790
Queue Service Time (g _s), s	12.2	9.8	2.1	6.7	7.7	2.0	4.7	11.4	11.4	4.5	14.5	14.5
Cycle Queue Clearance Time (g _c), s	19.8	9.8	2.1	16.5	7.7	2.0	4.7	11.4	11.4	4.5	14.5	14.5
Green Ratio (g/C)	0.25	0.25	0.25	0.25	0.25	0.25	0.07	0.53	0.53	0.07	0.53	0.53
Capacity (c), veh/h	281	478	406	246	478	406	124	1012	984	119	1006	948
Volume-to-Capacity Ratio (X)	0.599	0.504	0.121	0.376	0.407	0.113	0.781	0.399	0.399	0.778	0.481	0.481
Back of Queue (Q), ft/ln (95 th percentile)	162.5	196.4	36.1	85.9	157.6	34.1	101.2	207.3	203.3	94.8	253.1	242.3
Back of Queue (Q), veh/ln (95 th percentile)	6.5	7.9	1.4	3.4	6.3	1.4	4.0	8.3	8.1	3.8	10.1	9.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	36.3	28.9	26.0	35.9	28.1	25.9	41.3	12.5	12.5	41.4	13.4	13.4
Incremental Delay (d ₂), s/veh	1.2	0.3	0.0	0.4	0.2	0.0	5.4	1.2	1.2	4.1	1.6	1.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	37.6	29.2	26.0	36.3	28.3	26.0	46.6	13.7	13.7	45.5	15.0	15.1
Level of Service (LOS)	D	C	C	D	C	C	D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.9	C		30.2	C		17.3	B		17.8	B	
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.24	A	1.04	A	1.22	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2019	Analysis Period	1 > 7:30
Intersection	Intersecion #18	File Name	18AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	61		39				15	861			850	36

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.0	68.5	6.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

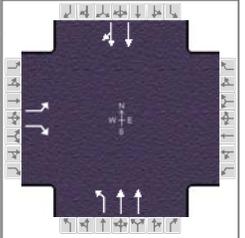
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			6.5	79.5		73.0
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.3			3.1	0.0		0.0
Queue Clearance Time (g _s), s		5.2			2.8			
Green Extension Time (g _e), s		0.2			0.0	0.0		0.0
Phase Call Probability		1.00			0.33			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	66		42				16	936			485	478
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1872
Queue Service Time (g _s), s	3.2		2.3				0.8	5.2			15.6	7.4
Cycle Queue Clearance Time (g _c), s	3.2		2.3				0.8	5.2			15.6	7.4
Green Ratio (g/C)	0.07		0.07				0.02	0.83			0.76	0.76
Capacity (c), veh/h	121		107				40	3015			1446	1425
Volume-to-Capacity Ratio (X)	0.550		0.395				0.404	0.310			0.335	0.335
Back of Queue (Q), ft/ln (95 th percentile)	66.2		41.6				17	35.5			95.6	94.4
Back of Queue (Q), veh/ln (95 th percentile)	2.6		1.7				0.7	1.4			3.8	3.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	40.7		40.3				43.4	1.7			3.5	3.5
Incremental Delay (d ₂), s/veh	1.4		0.9				2.4	0.3			0.6	0.6
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	42.1		41.1				45.8	2.0			4.1	4.1
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	41.7		D	0.0			2.7	A		4.1		A
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.27	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #18	File Name	18PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24		34				34	784			857	21

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.6	66.9	6.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

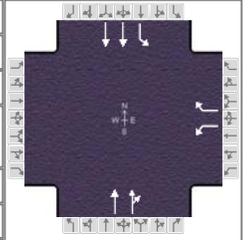
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8			1	6		2
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			8.1	79.5		71.4
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.4			3.1	0.0		0.0
Queue Clearance Time (g _s), s		4.0			3.8			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			0.60			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3		18				1	6			2	12
Adjusted Flow Rate (v), veh/h	26		37				37	852			479	475
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1884
Queue Service Time (g _s), s	1.2		2.0				1.8	4.6			15.3	7.8
Cycle Queue Clearance Time (g _c), s	1.2		2.0				1.8	4.6			15.3	7.8
Green Ratio (g/C)	0.07		0.07				0.04	0.83			0.74	0.74
Capacity (c), veh/h	121		107				73	3015			1412	1400
Volume-to-Capacity Ratio (X)	0.216		0.344				0.508	0.283			0.339	0.339
Back of Queue (Q), ft/ln (95 th percentile)	25.1		36.1				37.3	31.6			107.4	106.6
Back of Queue (Q), veh/ln (95 th percentile)	1.0		1.4				1.5	1.3			4.3	4.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	39.8		40.1				42.3	1.6			4.0	4.0
Incremental Delay (d ₂), s/veh	0.3		0.7				2.0	0.2			0.7	0.7
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	40.1		40.8				44.3	1.9			4.6	4.6
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	40.5		D		0.0		3.6	A		4.6		A
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.22	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / S. Cecilia	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersecion #19	File Name	19AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				90		75			810	44	66	809

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.0	64.4	7.1	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

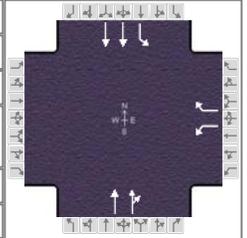
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				11.6		68.9	9.5	78.4
Change Period, (Y+R _c), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.4		0.0	3.1	0.0
Queue Clearance Time (g _s), s				6.7			2.8	
Green Extension Time (g _e), s				0.3		0.0	0.1	0.0
Phase Call Probability				1.00			0.83	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				98		82		468	460	72		879
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1865	1810		1809
Queue Service Time (g _s), s				4.7		4.4		14.9	8.4	0.8		5.2
Cycle Queue Clearance Time (g _c), s				4.7		4.4		14.9	8.4	0.8		5.2
Green Ratio (g/C)				0.08		0.08		0.72	0.72	0.79		0.82
Capacity (c), veh/h				142		127		1360	1335	518		2972
Volume-to-Capacity Ratio (X)				0.688		0.644		0.344	0.344	0.139		0.296
Back of Queue (Q), ft/ln (95 th percentile)				98.7		81.9		123.6	121.6	6.9		39.9
Back of Queue (Q), veh/ln (95 th percentile)				3.9		3.3		4.9	4.9	0.3		1.6
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				40.4		40.2		4.8	4.8	3.8		1.9
Incremental Delay (d ₂), s/veh				2.2		2.0		0.7	0.7	0.0		0.3
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				42.6		42.3		5.5	5.5	3.8		2.2
Level of Service (LOS)				D		D		A	A	A		A
Approach Delay, s/veh / LOS	0.0			42.5		D		5.5	A	2.3		A
Intersection Delay, s/veh / LOS				7.2						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.85	B	0.61	A
Bicycle LOS Score / LOS				F	1.25	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / S. Cecilia	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersecion #19	File Name	19PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				76		46			758	42	50	833

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.5	65.8	6.2	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

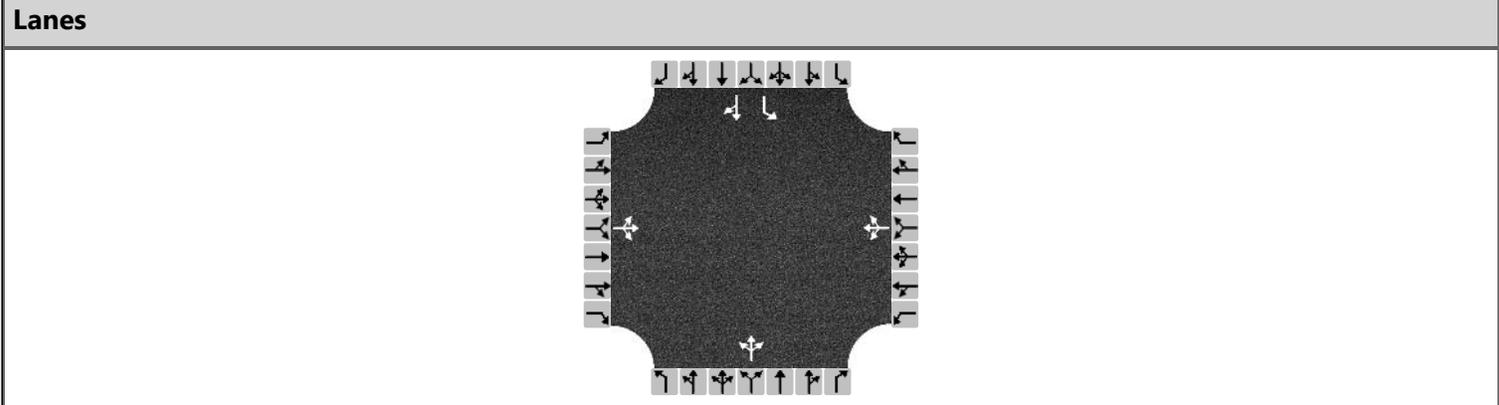
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				10.7		70.3	9.0	79.3
Change Period, (Y+R _c), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.3		0.0	3.1	0.0
Queue Clearance Time (g _s), s				6.0			2.5	
Green Extension Time (g _e), s				0.2		0.0	0.1	0.0
Phase Call Probability				1.00			0.74	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5		2
Adjusted Flow Rate (v), veh/h				83		50		439	431	54		905
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1864	1810		1809
Queue Service Time (g _s), s				4.0		2.7		13.7	7.3	0.5		5.1
Cycle Queue Clearance Time (g _c), s				4.0		2.7		13.7	7.3	0.5		5.1
Green Ratio (g/C)				0.07		0.07		0.73	0.73	0.80		0.83
Capacity (c), veh/h				125		112		1389	1363	544		3005
Volume-to-Capacity Ratio (X)				0.659		0.448		0.316	0.316	0.100		0.301
Back of Queue (Q), ft/ln (95 th percentile)				83.7		49.2		103.1	101.4	4.6		35.4
Back of Queue (Q), veh/ln (95 th percentile)				3.3		2.0		4.1	4.1	0.2		1.4
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				40.8		40.2		4.2	4.2	3.3		1.7
Incremental Delay (d ₂), s/veh				2.2		1.0		0.6	0.6	0.0		0.3
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				43.0		41.3		4.8	4.8	3.3		2.0
Level of Service (LOS)				D		D		A	A	A		A
Approach Delay, s/veh / LOS	0.0			42.4		D		4.8	A	2.1		A
Intersection Delay, s/veh / LOS	6.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.84	B	0.61	A
Bicycle LOS Score / LOS				F	1.20	A	1.28	A

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/5/2019	East/West Street	Elizabeth Street
Analysis Year	2019	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Existing with Project- AM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	3	49	0	68	67	74	1	264	102	73	341	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	57			227			399			79		
Percent Heavy Vehicles	2			2			2			2		

Departure Headway and Service Time

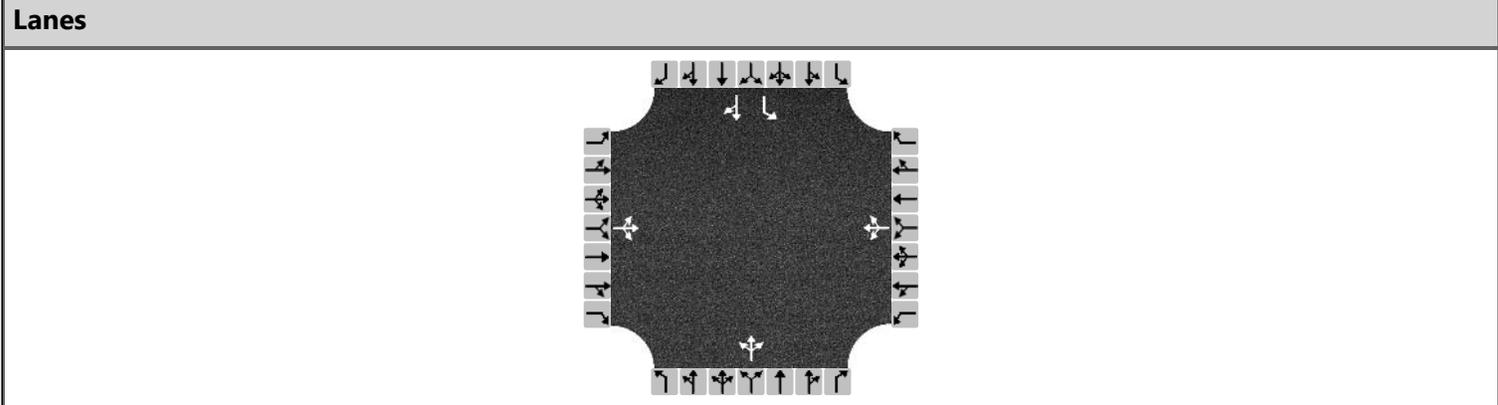
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.050			0.202			0.355			0.071	0.333	
Final Departure Headway, hd (s)	6.80			6.14			5.51			6.51	6.00	
Final Degree of Utilization, x	0.107			0.387			0.611			0.144	0.625	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	4.80			4.14			3.51			4.21	3.70	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	57			227			399			79	375	
Capacity	529			586			653			553	600	
95% Queue Length, Q ₉₅ (veh)	0.4			1.8			4.2			0.5	4.3	
Control Delay (s/veh)	10.6			13.0			16.8			10.3	18.2	
Level of Service, LOS	B			B			C			B	C	
Approach Delay (s/veh)	10.6			13.0			16.8			16.8		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	15.7						C					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/5/2019	East/West Street	Elizabeth Street
Analysis Year	2019	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Existing with Project- PM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	4	62	0	80	67	43	0	314	80	46	346	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L	TR	
Flow Rate, v (veh/h)	72			207			428			50	380	
Percent Heavy Vehicles	2			2			2			2	2	

Departure Headway and Service Time

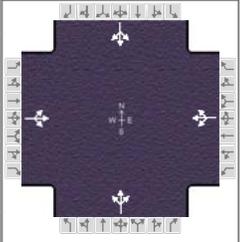
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.064			0.184			0.381			0.044	0.338	
Final Departure Headway, hd (s)	6.84			6.36			5.56			6.57	6.05	
Final Degree of Utilization, x	0.136			0.365			0.662			0.091	0.640	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	4.84			4.36			3.56			4.27	3.75	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	72			207			428			50	380	
Capacity	526			566			647			548	595	
95% Queue Length, Q ₉₅ (veh)	0.5			1.7			5.0			0.3	4.6	
Control Delay (s/veh)	10.9			13.0			18.8			9.9	18.9	
Level of Service, LOS	B			B			C			A	C	
Approach Delay (s/veh)	10.9			13.0			18.8			17.8		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	16.9						C					

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Otis / Live Oak	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Interesction #8	File Name	08AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	27	61	31	36	57	85	29	421	48	69	331	18

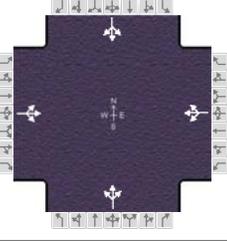
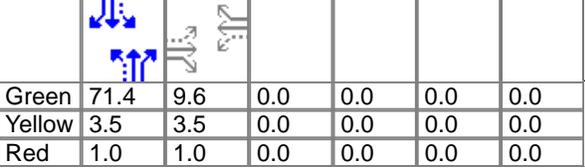
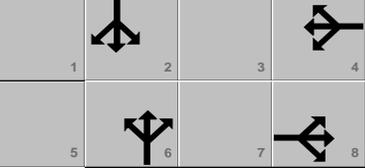
Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	68.4	12.6	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		17.1		17.1		72.9		72.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.4		3.4		0.0		0.0
Queue Clearance Time (g _s), s		8.1		12.0				
Green Extension Time (g _e), s		0.6		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	129			193			541			454		
Adjusted Saturation Flow Rate (s), veh/h/ln	1724			1679			1816			1640		
Queue Service Time (g _s), s	0.0			3.9			0.0			0.0		
Cycle Queue Clearance Time (g _c), s	6.1			10.0			8.8			6.8		
Green Ratio (g/C)	0.14			0.14			0.76			0.76		
Capacity (c), veh/h	290			283			1423			1293		
Volume-to-Capacity Ratio (X)	0.446			0.685			0.380			0.351		
Back of Queue (Q), ft/ln (95 th percentile)	119.6			188.9			127.4			101.9		
Back of Queue (Q), veh/ln (95 th percentile)	4.8			7.6			5.1			4.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	35.9			37.5			3.6			3.4		
Incremental Delay (d ₂), s/veh	0.4			1.1			0.8			0.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	36.3			38.6			4.4			4.2		
Level of Service (LOS)	D			D			A			A		
Approach Delay, s/veh / LOS	36.3		D	38.6		D	4.4		A	4.2		A
Intersection Delay, s/veh / LOS	12.5						B					

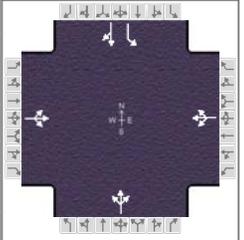
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.71	B	1.61	B	1.61	B
Bicycle LOS Score / LOS	0.70	A	0.81	A	1.38	A	1.24	A

HCS7 Signalized Intersection Results Summary

General Information						Intersection Information											
Agency	LLG Engineers					Duration, h	0.25										
Analyst	AS		Analysis Date	Dec 13, 2019		Area Type	Other										
Jurisdiction	City of Cudahy		Time Period	Future - PM		PHF	0.92										
Urban Street	Otis / Live Oak		Analysis Year	2021		Analysis Period	1 > 7:00										
Intersection	Interesction #8		File Name	08PM - Future.xus													
Project Description	7801-7835 Otis Avenue Charter School																
Demand Information						EB			WB			NB			SB		
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						13	58	18	38	43	47	20	324	44	51	361	22
Signal Information																	
Cycle, s	90.0	Reference Phase	2														
Offset, s	0	Reference Point	End														
Uncoordinated	No	Simult. Gap E/W	On														
Force Mode	Fixed	Simult. Gap N/S	On														
Green	71.4	9.6	0.0	0.0	0.0	0.0											
Yellow	3.5	3.5	0.0	0.0	0.0	0.0											
Red	1.0	1.0	0.0	0.0	0.0	0.0											
Timer Results						EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8		4		6		2				
Case Number							8.0		8.0		8.0		8.0				
Phase Duration, s							14.1		14.1		75.9		75.9				
Change Period, (Y+R _c), s							4.5		4.5		4.5		4.5				
Max Allow Headway (MAH), s							3.2		3.2		0.0		0.0				
Queue Clearance Time (g _s), s							6.5		9.3								
Green Extension Time (g _e), s							0.4		0.4		0.0		0.0				
Phase Call Probability							1.00		1.00								
Max Out Probability							0.00		0.00								
Movement Group Results						EB			WB			NB			SB		
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement						3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h						97			139			422			472		
Adjusted Saturation Flow Rate (s), veh/h/ln						1791			1658			1815			1741		
Queue Service Time (g _s), s						0.0			2.8			0.0			0.0		
Cycle Queue Clearance Time (g _c), s						4.5			7.3			5.5			6.2		
Green Ratio (g/C)						0.11			0.11			0.79			0.79		
Capacity (c), veh/h						237			229			1482			1426		
Volume-to-Capacity Ratio (X)						0.407			0.607			0.285			0.331		
Back of Queue (Q), ft/ln (95 th percentile)						89.5			133.7			59.5			70.1		
Back of Queue (Q), veh/ln (95 th percentile)						3.6			5.3			2.4			2.8		
Queue Storage Ratio (RQ) (95 th percentile)						0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh						37.9			39.0			2.5			2.6		
Incremental Delay (d ₂), s/veh						0.4			1.0			0.5			0.6		
Initial Queue Delay (d ₃), s/veh						0.0			0.0			0.0			0.0		
Control Delay (d), s/veh						38.3			40.0			3.0			3.2		
Level of Service (LOS)						D			D			A			A		
Approach Delay, s/veh / LOS						38.3	D	40.0	D	3.0	A	3.2	A				
Intersection Delay, s/veh / LOS						10.7						B					
Multimodal Results						EB			WB			NB			SB		
Pedestrian LOS Score / LOS						1.72	B	1.72	B	1.60	B	1.60	B				
Bicycle LOS Score / LOS						0.65	A	0.72	A	1.18	A	1.27	A				

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Interesction #9	File Name	09AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	16	110	14	113	109	133	6	280	114	87	229	14

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	57.4	23.6	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

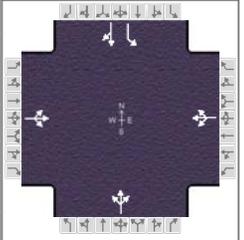
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		28.1		28.1		61.9		61.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.9		23.2				
Green Extension Time (g _e), s		1.2		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	152			386			435			95 264		
Adjusted Saturation Flow Rate (s), veh/h/ln	1789			1588			1803			975 1880		
Queue Service Time (g _s), s	0.0			15.4			0.0			4.6 5.3		
Cycle Queue Clearance Time (g _c), s	5.9			21.2			10.3			14.9 5.3		
Green Ratio (g/C)	0.26			0.26			0.64			0.64 0.64		
Capacity (c), veh/h	514			469			1190			590 1199		
Volume-to-Capacity Ratio (X)	0.296			0.822			0.365			0.160 0.220		
Back of Queue (Q), ft/ln (95 th percentile)	116.6			354.7			178.1			47.9 94.8		
Back of Queue (Q), veh/ln (95 th percentile)	4.7			14.2			7.1			1.9 3.8		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	26.7			32.1			7.8			11.3 6.9		
Incremental Delay (d ₂), s/veh	0.1			9.1			0.9			0.6 0.4		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	26.8			41.3			8.7			11.9 7.3		
Level of Service (LOS)	C			D			A			B A		
Approach Delay, s/veh / LOS	26.8	C		41.3	D		8.7	A		8.5	A	
Intersection Delay, s/veh / LOS	20.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.93	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.74	A	1.12	A	1.20	A	1.08	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Interesction #9	File Name	09PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	11	117	6	124	93	80	5	277	117	95	293	22

Signal Information				Signal Phases							
Cycle, s	90.0	Reference Phase	2								
Offset, s	0	Reference Point	End	Green	60.2	20.8	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	

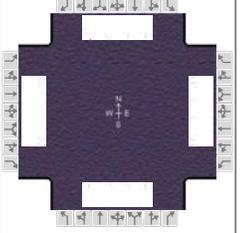
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		25.3		25.3		64.7		64.7
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.8		20.2				
Green Extension Time (g _e), s		1.0		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.31				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	146			323			434			103	342	
Adjusted Saturation Flow Rate (s), veh/h/ln	1854			1548			1800			975	1876	
Queue Service Time (g _s), s	0.0			12.4			0.0			4.6	6.6	
Cycle Queue Clearance Time (g _c), s	5.8			18.2			9.4			14.1	6.6	
Green Ratio (g/C)	0.23			0.23			0.67			0.67	0.67	
Capacity (c), veh/h	471			414			1246			630	1256	
Volume-to-Capacity Ratio (X)	0.309			0.780			0.348			0.164	0.273	
Back of Queue (Q), ft/ln (95 th percentile)	117			295.1			155.6			47.1	114.1	
Back of Queue (Q), veh/ln (95 th percentile)	4.7			11.8			6.2			1.9	4.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00	0.00	
Uniform Delay (d ₁), s/veh	28.9			33.5			6.5			9.5	6.0	
Incremental Delay (d ₂), s/veh	0.1			5.3			0.8			0.6	0.5	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0	0.0	
Control Delay (d), s/veh	29.0			38.8			7.2			10.1	6.6	
Level of Service (LOS)	C			D			A			B	A	
Approach Delay, s/veh / LOS	29.0	C		38.8	D		7.2	A		7.4	A	
Intersection Delay, s/veh / LOS	17.2						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.93	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.73	A	1.02	A	1.20	A	1.22	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	184	834	225	195	951	104	170	813	133	148	643	89

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		10.8	30.5	6.0	2.5	22.2	0.0				
		Yellow		3.5	3.5	3.5	0.0	3.5	0.0				
		Red		1.0	1.0	1.0	0.0	1.0	0.0				

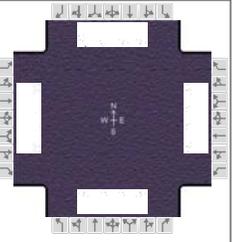
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.3	35.0	15.3	35.0	13.0	29.2	10.5	26.7
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	11.8		12.5		10.5	23.1	6.0	20.5
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.6	0.1	1.6
Phase Call Probability	0.99		1.00		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	200	907	245	212	1034	113	185	884	145	161	406	389
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1819
Queue Service Time (g_s), s	9.8	19.9	10.7	10.5	23.8	4.5	8.5	21.1	5.4	4.0	18.4	18.5
Cycle Queue Clearance Time (g_c), s	9.8	19.9	10.7	10.5	23.8	4.5	8.5	21.1	5.4	4.0	18.4	18.5
Green Ratio (g/C)	0.12	0.34	0.34	0.12	0.34	0.34	0.09	0.27	0.39	0.07	0.25	0.25
Capacity (c), veh/h	218	1226	546	218	1226	546	171	992	635	234	468	448
Volume-to-Capacity Ratio (X)	0.918	0.739	0.448	0.973	0.843	0.207	1.081	0.891	0.228	0.687	0.868	0.869
Back of Queue (Q), ft/ln (95 th percentile)	269.6	341.8	191.4	307.5	409.1	79.2	327.2	380.8	86.2	78.7	377	366.6
Back of Queue (Q), veh/ln (95 th percentile)	10.8	13.7	7.7	12.3	16.4	3.2	13.1	15.2	3.4	3.1	15.1	14.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.1	26.2	23.2	39.4	27.5	21.2	40.8	31.4	18.1	41.1	32.5	32.5
Incremental Delay (d_2), s/veh	38.6	4.0	2.7	53.0	7.2	0.9	92.2	9.0	0.1	1.3	13.7	14.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	77.7	30.3	25.8	92.4	34.7	22.0	132.9	40.4	18.2	42.4	46.2	46.9
Level of Service (LOS)	E	C	C	F	C	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	36.5		D	42.7		D	51.8		D	45.8		D
Intersection Delay, s/veh / LOS	43.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.60	B	1.61	B	1.49	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	132	860	147	175	757	146	152	590	127	208	718	92

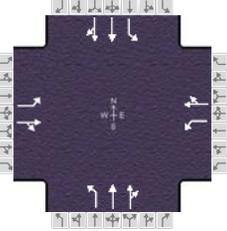
Signal Information				Signal Timing Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	8.8	1.1	30.5	7.7	0.8	23.2						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	13.3	35.0	14.3	36.1	13.0	28.5	12.2	27.7
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	9.0		11.4		10.2	16.2	7.7	22.7
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.5
Phase Call Probability	0.97		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.36	1.00	1.00

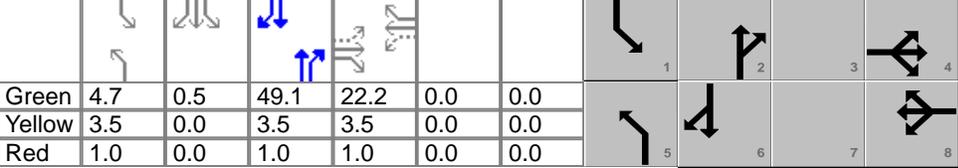
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	143	935	160	190	823	159	165	641	138	226	449	431
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1824
Queue Service Time (g_s), s	7.0	20.7	6.6	9.4	17.2	6.4	8.2	14.2	5.3	5.7	20.7	20.7
Cycle Queue Clearance Time (g_c), s	7.0	20.7	6.6	9.4	17.2	6.4	8.2	14.2	5.3	5.7	20.7	20.7
Green Ratio (g/C)	0.10	0.34	0.34	0.11	0.35	0.35	0.09	0.27	0.38	0.09	0.26	0.26
Capacity (c), veh/h	176	1226	546	198	1269	565	171	964	605	300	489	469
Volume-to-Capacity Ratio (X)	0.814	0.762	0.293	0.961	0.648	0.281	0.967	0.665	0.228	0.754	0.919	0.919
Back of Queue (Q), ft/ln (95 th percentile)	176.5	355.1	116.1	281.9	298.1	112.5	261.3	254.5	85.3	120.8	442.9	431
Back of Queue (Q), veh/ln (95 th percentile)	7.1	14.2	4.6	11.3	11.9	4.5	10.5	10.2	3.4	4.8	17.7	17.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.8	26.5	21.8	39.9	24.5	21.0	40.6	29.4	19.2	40.2	32.5	32.5
Incremental Delay (d_2), s/veh	18.2	4.5	1.4	52.3	2.6	1.2	58.5	1.4	0.1	7.1	21.6	22.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	58.0	31.0	23.2	92.2	27.1	22.3	99.1	30.8	19.3	47.4	54.1	54.8
Level of Service (LOS)	E	C	C	F	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	33.2		C	37.0		D	41.1		D	53.0		D
Intersection Delay, s/veh / LOS	40.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.51	B	1.45	A	1.27	A	1.40	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92	
Urban Street	Atlantic / Live Oak	Analysis Year	2021	Analysis Period	1 > 7:15	
Intersection	Interesction #14	File Name	14AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	67	161	72	101	130	65	57	961	140	74	799	66

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	4.7	0.5	49.1	22.2	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

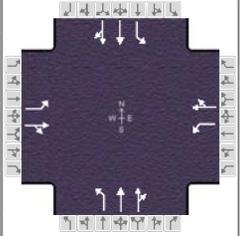
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		26.7		26.7	9.2	53.6	9.7	54.1
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		16.1		21.4	5.0		5.9	
Green Extension Time (g_e), s		1.2		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.79		0.87	
Max Out Probability		0.07		0.75	0.07		0.33	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	73	253		110	212		62	611	585	80	477	464
Adjusted Saturation Flow Rate (s), veh/h/ln	1188	1800		1144	1792		1810	1900	1815	1810	1900	1849
Queue Service Time (g_s), s	5.0	11.1		8.4	9.1		3.0	19.4	19.5	3.9	13.5	13.5
Cycle Queue Clearance Time (g_c), s	14.1	11.1		19.4	9.1		3.0	19.4	19.5	3.9	13.5	13.5
Green Ratio (g/C)	0.25	0.25		0.25	0.25		0.05	0.55	0.55	0.06	0.55	0.55
Capacity (c), veh/h	253	443		221	442		95	1037	991	104	1047	1019
Volume-to-Capacity Ratio (X)	0.288	0.571		0.497	0.480		0.652	0.589	0.591	0.770	0.455	0.455
Back of Queue (Q), ft/ln (95 th percentile)	65.9	210.6		107	176.8		62.7	320.1	310.6	83.3	235.8	231.1
Back of Queue (Q), veh/ln (95 th percentile)	2.6	8.4		4.3	7.1		2.5	12.8	12.4	3.3	9.4	9.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	35.0	29.7		38.3	29.0		41.8	13.7	13.7	41.8	12.1	12.1
Incremental Delay (d_2), s/veh	0.2	0.4		0.6	0.3		2.8	2.5	2.6	4.4	1.4	1.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	35.2	30.2		38.9	29.3		44.6	16.1	16.3	46.2	13.5	13.6
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.3	C		32.6	C		17.6	B		16.1	B	
Intersection Delay, s/veh / LOS	20.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.03	A	1.02	A	1.53	B	1.33	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Interesction #15	File Name	15AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	78	139	110	102	205	138	63	963	151	132	806	100

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End	Green	4.9	1.6	44.5	25.5	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0		

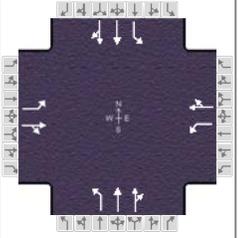
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	9.4	49.0	11.0	50.6
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		26.6		22.0	5.3		8.5	
Green Extension Time (g_e), s		0.0		0.9	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.82		0.97	
Max Out Probability		1.00		0.99	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	85	271		111	373		68	619	592	143	502	483
Adjusted Saturation Flow Rate (s), veh/h/ln	1026	1760		1126	1772		1810	1900	1810	1810	1900	1826
Queue Service Time (g_s), s	7.4	11.7		8.3	17.2		3.3	22.0	22.1	6.5	15.8	15.8
Cycle Queue Clearance Time (g_c), s	24.6	11.7		20.0	17.2		3.3	22.0	22.1	6.5	15.8	15.8
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.05	0.49	0.49	0.07	0.51	0.51
Capacity (c), veh/h	175	499		252	502		99	939	895	131	973	935
Volume-to-Capacity Ratio (X)	0.485	0.543		0.439	0.743		0.693	0.659	0.661	1.097	0.516	0.516
Back of Queue (Q), ft/ln (95 th percentile)	84	213.4		103.8	313.9		71.8	370.8	359.1	282.9	274.8	266.8
Back of Queue (Q), veh/ln (95 th percentile)	3.4	8.5		4.2	12.6		2.9	14.8	14.4	11.3	11.0	10.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	40.4	27.3		35.8	29.3		41.8	17.1	17.1	41.7	14.6	14.6
Incremental Delay (d_2), s/veh	0.8	0.7		0.4	5.2		4.9	3.6	3.8	107.2	2.0	2.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.2	28.0		36.2	34.5		46.7	20.7	20.9	149.0	16.5	16.6
Level of Service (LOS)	D	C		D	C		D	C	C	F	B	B
Approach Delay, s/veh / LOS	31.1	C		34.9	C		22.2	C		33.4	C	
Intersection Delay, s/veh / LOS	29.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.07	A	1.29	A	1.54	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Interesction #15	File Name	15PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	56	228	72	106	225	98	76	741	138	113	925	73

Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	5.3	1.2	44.5	25.5	0.0	0.0						
Yellow	3.5	0.0	3.5	3.5	0.0	0.0						
Red	1.0	0.0	1.0	1.0	0.0	0.0						

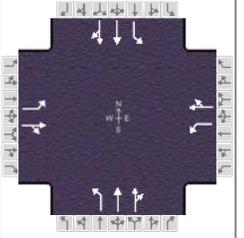
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	9.8	49.0	11.0	50.2
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		22.6		25.5	6.1		8.1	
Green Extension Time (g _e), s		0.8		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.87		0.95	
Max Out Probability		1.00		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	61	326		115	351		83	491	464	123	549	535
Adjusted Saturation Flow Rate (s), veh/h/ln	1046	1821		1070	1802		1810	1900	1796	1810	1900	1851
Queue Service Time (g _s), s	4.9	14.1		9.5	15.6		4.1	15.9	15.9	6.1	18.0	18.0
Cycle Queue Clearance Time (g _c), s	20.6	14.1		23.5	15.6		4.1	15.9	15.9	6.1	18.0	18.0
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.06	0.49	0.49	0.07	0.51	0.51
Capacity (c), veh/h	195	516		216	510		106	939	888	131	965	940
Volume-to-Capacity Ratio (X)	0.312	0.632		0.533	0.688		0.777	0.523	0.523	0.940	0.569	0.570
Back of Queue (Q), ft/ln (95 th percentile)	57.2	258.8		115	287.4		101.4	278.9	267.5	210.1	307.9	302
Back of Queue (Q), veh/ln (95 th percentile)	2.3	10.4		4.6	11.5		4.1	11.2	10.7	8.4	12.3	12.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	37.9	28.2		38.4	28.7		41.8	15.5	15.5	41.6	15.3	15.3
Incremental Delay (d ₂), s/veh	0.3	1.9		1.3	3.2		16.4	2.1	2.2	59.6	2.4	2.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.2	30.1		39.8	31.9		58.2	17.6	17.7	101.2	17.8	17.8
Level of Service (LOS)	D	C		D	C		E	B	B	F	B	B
Approach Delay, s/veh / LOS	31.3	C		33.9	C		20.9	C		26.3	C	
Intersection Delay, s/veh / LOS	26.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.13	A	1.26	A	1.34	A	1.48	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Interesction #16	File Name	16AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	135	133	53	90	84	145	32	899	99	88	801	99

Signal Information				Phase Diagrams																				
Cycle, s	90.0	Reference Phase	2																					
Offset, s	0	Reference Point	End	Green	3.5	2.6	45.8	24.6	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Force Mode	Fixed	Simult. Gap N/S	On	1	2	3	4	5	6	7	8									

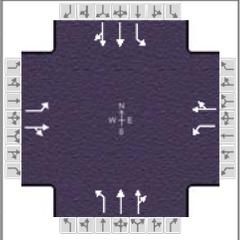
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		29.1		29.1	8.0	50.3	10.6	52.9
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.5		3.5	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		24.4		16.8	3.7		6.7	
Green Extension Time (g_e), s		0.3		1.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.58		0.91	
Max Out Probability		1.00		0.12	0.37		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	147	202		98	249		35	552	533	96	499	479
Adjusted Saturation Flow Rate (s), veh/h/ln	1149	1807		1199	1706		1810	1900	1833	1810	1900	1826
Queue Service Time (g_s), s	11.2	8.2		6.5	11.2		1.7	18.1	18.1	4.7	14.8	14.8
Cycle Queue Clearance Time (g_c), s	22.4	8.2		14.8	11.2		1.7	18.1	18.1	4.7	14.8	14.8
Green Ratio (g/C)	0.27	0.27		0.27	0.27		0.04	0.51	0.51	0.07	0.54	0.54
Capacity (c), veh/h	252	495		299	467		70	966	933	122	1021	982
Volume-to-Capacity Ratio (X)	0.582	0.409		0.328	0.533		0.496	0.571	0.571	0.783	0.488	0.488
Back of Queue (Q), ft/ln (95 th percentile)	146.7	160		86	202.1		35.2	309.6	301.6	116.2	257	249.6
Back of Queue (Q), veh/ln (95 th percentile)	5.9	6.4		3.4	8.1		1.4	12.4	12.1	4.6	10.3	10.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	37.3	26.7		32.8	27.8		42.4	15.3	15.3	41.3	13.1	13.1
Incremental Delay (d_2), s/veh	1.8	0.2		0.2	0.5		2.0	2.4	2.5	15.9	1.7	1.7
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.1	26.9		33.0	28.3		44.4	17.8	17.9	57.2	14.7	14.8
Level of Service (LOS)	D	C		C	C		D	B	B	E	B	B
Approach Delay, s/veh / LOS	32.1	C		29.6	C		18.6	B		18.5	B	
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	2.28 B	2.28 B	1.89 B	1.89 B
Bicycle LOS Score / LOS	1.06 A	1.06 A	1.41 A	1.37 A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Interesction #16	File Name	16PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	99	107	79	55	92	96	57	752	66	101	863	118

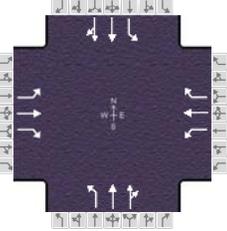
Signal Information											
Cycle, s	90.0	Reference Phase	2								
Offset, s	0	Reference Point	End								
Uncoordinated	No	Simult. Gap E/W	On								
Force Mode	Fixed	Simult. Gap N/S	On								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		24.5		24.5	9.2	54.1	11.4	56.3
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		19.1		15.2	5.0		7.4	
Green Extension Time (g _e), s		0.9		1.1	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.79		0.94	
Max Out Probability		0.24		0.04	0.00		0.13	

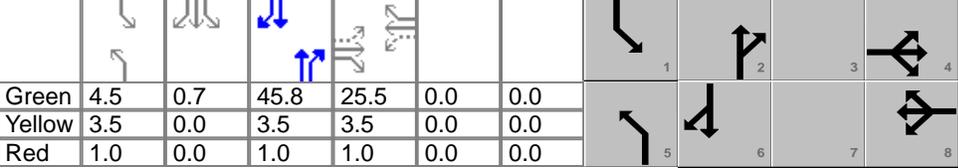
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	108	202		60	204		62	451	438	110	545	522
Adjusted Saturation Flow Rate (s), veh/h/ln	1196	1765		1199	1740		1810	1900	1846	1810	1900	1819
Queue Service Time (g _s), s	7.8	9.1		4.1	9.3		3.0	12.6	12.6	5.4	15.3	15.3
Cycle Queue Clearance Time (g _c), s	17.1	9.1		13.2	9.3		3.0	12.6	12.6	5.4	15.3	15.3
Green Ratio (g/C)	0.22	0.22		0.22	0.22		0.05	0.55	0.55	0.08	0.58	0.58
Capacity (c), veh/h	222	391		226	386		95	1047	1017	140	1094	1048
Volume-to-Capacity Ratio (X)	0.485	0.517		0.265	0.530		0.652	0.431	0.431	0.786	0.498	0.498
Back of Queue (Q), ft/ln (95 th percentile)	104.7	174.5		55.3	177		62.7	222.2	217.6	111.4	257.4	249.4
Back of Queue (Q), veh/ln (95 th percentile)	4.2	7.0		2.2	7.1		2.5	8.9	8.7	4.5	10.3	10.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.4	30.8		36.5	30.9		41.8	11.9	11.9	40.8	11.4	11.4
Incremental Delay (d ₂), s/veh	0.6	0.4		0.2	0.4		2.8	1.3	1.3	3.7	1.6	1.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.0	31.2		36.8	31.3		44.6	13.2	13.2	44.5	13.0	13.0
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	33.9	C		32.5	C		15.2	B		15.9	B	
Intersection Delay, s/veh / LOS	19.4						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.88	B
Bicycle LOS Score / LOS	1.00	A	0.92	A	1.27	A	1.46	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92	
Urban Street	Atlantic / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:15	
Intersection	Interesction #17	File Name	17AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	182	212	71	75	213	97	51	763	36	74	727	117

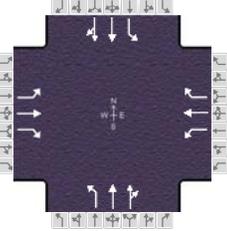
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.5	0.7	45.8	25.5	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	9.0	50.3	9.7	51.0
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		25.9		16.4	4.7		5.9	
Green Extension Time (g_e), s		0.0		1.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.75		0.87	
Max Out Probability		1.00		0.15	1.00		1.00	

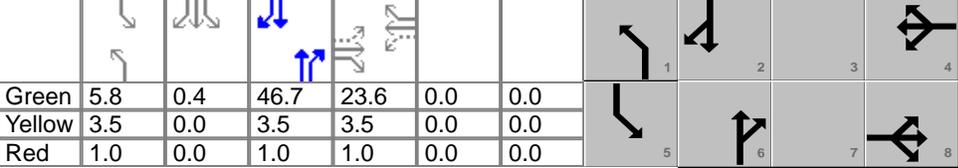
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	198	230	77	82	232	105	55	438	431	80	470	447
Adjusted Saturation Flow Rate (s), veh/h/ln	1167	1900	1610	1168	1900	1610	1810	1900	1869	1810	1900	1807
Queue Service Time (g_s), s	15.0	8.9	3.2	5.5	9.0	4.5	2.7	13.2	13.2	3.9	14.3	14.3
Cycle Queue Clearance Time (g_c), s	23.9	8.9	3.2	14.4	9.0	4.5	2.7	13.2	13.2	3.9	14.3	14.3
Green Ratio (g/C)	0.28	0.28	0.28	0.28	0.28	0.28	0.05	0.51	0.51	0.06	0.52	0.52
Capacity (c), veh/h	295	538	456	295	538	456	90	967	951	104	982	934
Volume-to-Capacity Ratio (X)	0.671	0.428	0.169	0.276	0.430	0.231	0.613	0.453	0.453	0.770	0.479	0.479
Back of Queue (Q), ft/ln (95 th percentile)	201.6	178.5	55.2	70.6	182.2	77.9	56	237.5	234.7	96.8	252.4	243.3
Back of Queue (Q), veh/ln (95 th percentile)	8.1	7.1	2.2	2.8	7.3	3.1	2.2	9.5	9.4	3.9	10.1	9.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	36.1	26.3	24.3	32.2	26.3	24.7	41.9	14.1	14.1	41.8	14.0	14.0
Incremental Delay (d_2), s/veh	4.8	0.2	0.1	0.2	0.2	0.1	2.5	1.5	1.6	14.8	1.7	1.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	40.9	26.5	24.3	32.4	26.5	24.8	44.4	15.6	15.7	56.6	15.6	15.7
Level of Service (LOS)	D	C	C	C	C	C	D	B	B	E	B	B
Approach Delay, s/veh / LOS	31.8		C	27.2		C	17.4		B	19.0		B
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.32	A	1.18	A	1.25	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92	
Urban Street	Atlantic / Santa Ana	Analysis Year	2021	Analysis Period	1 > 16:30	
Intersection	Interesction #17	File Name	17PM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	168	227	40	87	182	51	83	704	58	89	748	147

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.8	0.4	46.7	23.6	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0			
				Red	1.0	0.0	1.0	1.0	0.0	0.0			

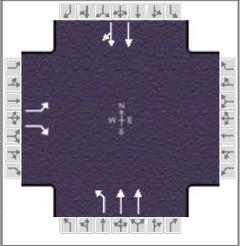
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.1		28.1	10.3	51.2	10.7	51.6
Change Period, ($Y+R_c$), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.3		3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g_s), s		23.0		18.7	6.4		6.7	
Green Extension Time (g_e), s		0.7		1.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.90		0.91	
Max Out Probability		1.00		0.28	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	183	247	43	95	198	55	90	420	409	97	501	472
Adjusted Saturation Flow Rate (s), veh/h/ln	1204	1900	1610	1151	1900	1610	1810	1900	1849	1810	1900	1791
Queue Service Time (g_s), s	13.3	9.9	1.8	6.8	7.7	2.4	4.4	12.3	12.3	4.7	15.3	15.3
Cycle Queue Clearance Time (g_c), s	21.0	9.9	1.8	16.7	7.7	2.4	4.4	12.3	12.3	4.7	15.3	15.3
Green Ratio (g/C)	0.26	0.26	0.26	0.26	0.26	0.26	0.06	0.52	0.52	0.07	0.52	0.52
Capacity (c), veh/h	293	499	423	255	499	423	116	986	960	124	995	938
Volume-to-Capacity Ratio (X)	0.624	0.495	0.103	0.370	0.397	0.131	0.778	0.425	0.426	0.782	0.503	0.503
Back of Queue (Q), ft/ln (95 th percentile)	179.2	197.6	31.4	86.9	158	40.9	97.5	222.5	218.2	108.8	266.5	255.1
Back of Queue (Q), veh/ln (95 th percentile)	7.2	7.9	1.3	3.5	6.3	1.6	3.9	8.9	8.7	4.4	10.7	10.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	35.9	28.1	25.2	35.2	27.3	25.4	41.5	13.4	13.4	41.3	13.9	13.9
Incremental Delay (d_2), s/veh	2.2	0.3	0.0	0.3	0.2	0.1	7.4	1.3	1.4	10.3	1.8	1.9
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.1	28.4	25.2	35.6	27.5	25.4	48.9	14.7	14.7	51.5	15.7	15.8
Level of Service (LOS)	D	C	C	D	C	C	D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.9	C		29.4	C		18.1	B		19.0	B	
Intersection Delay, s/veh / LOS	22.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.27	A	1.06	A	1.25	A	1.37	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2021	Analysis Period	1> 7:30
Intersection	Interesction #18	File Name	18AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	62		40				15	857			850	37

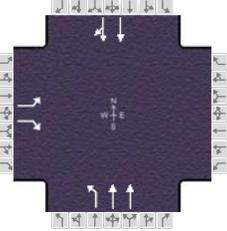
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.0	68.5	6.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			6.5	79.5		73.0
Change Period, ($Y+R_c$), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.3			3.1	0.0		0.0
Queue Clearance Time (g_s), s		5.2			2.8			
Green Extension Time (g_e), s		0.2			0.0	0.0		0.0
Phase Call Probability		1.00			0.33			
Max Out Probability		0.00			0.00			

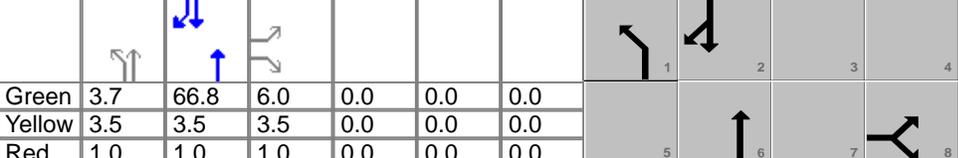
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	67		43				16	932			486	478
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1872
Queue Service Time (g_s), s	3.2		2.3				0.8	5.2			15.6	7.4
Cycle Queue Clearance Time (g_c), s	3.2		2.3				0.8	5.2			15.6	7.4
Green Ratio (g/C)	0.07		0.07				0.02	0.83			0.76	0.76
Capacity (c), veh/h	121		107				40	3015			1446	1424
Volume-to-Capacity Ratio (X)	0.559		0.405				0.404	0.309			0.336	0.336
Back of Queue (Q), ft/ln (95 th percentile)	67.3		42.7				17	35.3			95.7	94.5
Back of Queue (Q), veh/ln (95 th percentile)	2.7		1.7				0.7	1.4			3.8	3.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh	40.7		40.3				43.4	1.7			3.5	3.5
Incremental Delay (d_2), s/veh	1.5		0.9				2.4	0.3			0.6	0.6
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	42.2		41.2				45.8	2.0			4.1	4.1
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	41.8		D	0.0			2.7	A		4.1		A
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.27	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92	
Urban Street	Atlantic / N. Cecilia	Analysis Year	2021	Analysis Period	1 > 17:00	
Intersection	Interesction #18	File Name	18PM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	24		35				35	807			879	21

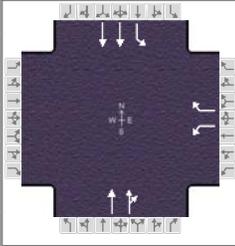
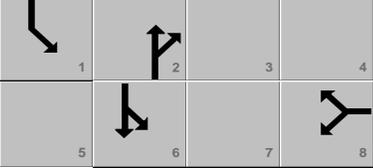
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	3.7	66.8	6.0	0.0	0.0	0.0					
	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
	Red	1.0	1.0	1.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8			1	6		2
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			8.2	79.5		71.3
Change Period, ($Y+R_c$), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.4			3.1	0.0		0.0
Queue Clearance Time (g_s), s		4.0			3.9			
Green Extension Time (g_e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			0.61			
Max Out Probability		0.00			0.00			

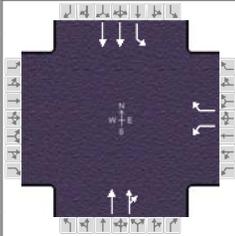
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3		18				1	6			2	12
Adjusted Flow Rate (v), veh/h	26		38				38	877			491	487
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1884
Queue Service Time (g_s), s	1.2		2.0				1.9	4.8			15.9	8.1
Cycle Queue Clearance Time (g_c), s	1.2		2.0				1.9	4.8			15.9	8.1
Green Ratio (g/C)	0.07		0.07				0.04	0.83			0.74	0.74
Capacity (c), veh/h	121		107				74	3015			1411	1399
Volume-to-Capacity Ratio (X)	0.216		0.354				0.514	0.291			0.348	0.348
Back of Queue (Q), ft/ln (95 th percentile)	25.1		37.2				38.4	32.6			110.8	110
Back of Queue (Q), veh/ln (95 th percentile)	1.0		1.5				1.5	1.3			4.4	4.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d_1), s/veh	39.8		40.1				42.3	1.7			4.0	4.0
Incremental Delay (d_2), s/veh	0.3		0.7				2.0	0.2			0.7	0.7
Initial Queue Delay (d_3), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	40.1		40.9				44.3	1.9			4.7	4.7
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	40.6		D	0.0			3.7	A			4.7	A
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.24	A	1.29	A

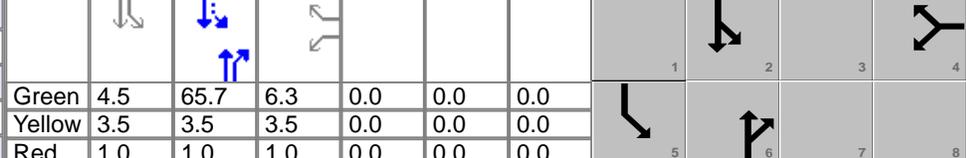
HCS7 Signalized Intersection Results Summary

General Information						Intersection Information									
Agency	LLG Engineers					Duration, h	0.25								
Analyst	AS		Analysis Date	Dec 13, 2019		Area Type	Other								
Jurisdiction	City of Cudahy		Time Period	Future - AM		PHF	0.92								
Urban Street	Atlantic / S. Cecilia		Analysis Year	2021		Analysis Period	1 > 7:15								
Intersection	Interesction #19		File Name	19AM - Future.xus											
Project Description	7801-7835 Otis Avenue Charter School														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h							92		70		810	45	63	812	
Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	4.9	64.4	7.2	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							8		2	1	6				
Case Number							9.0		8.3	1.0	4.0				
Phase Duration, s							11.7		68.9	9.4	78.3				
Change Period, (Y+R _c), s							4.5		4.5	4.5	4.5				
Max Allow Headway (MAH), s							3.4		0.0	3.1	0.0				
Queue Clearance Time (g _s), s							6.8			2.7					
Green Extension Time (g _e), s							0.3		0.0	0.1	0.0				
Phase Call Probability							1.00			0.82					
Max Out Probability							0.00			0.00					
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement							3		18	2	12	1	6		
Adjusted Flow Rate (v), veh/h							100		76	469	460	68	883		
Adjusted Saturation Flow Rate (s), veh/h/ln							1810		1610	1900	1864	1810	1809		
Queue Service Time (g _s), s							4.8		4.1	14.9	8.4	0.7	5.2		
Cycle Queue Clearance Time (g _c), s							4.8		4.1	14.9	8.4	0.7	5.2		
Green Ratio (g/C)							0.08		0.08	0.72	0.72	0.79	0.82		
Capacity (c), veh/h							144		128	1360	1334	515	2968		
Volume-to-Capacity Ratio (X)							0.694		0.593	0.345	0.345	0.133	0.297		
Back of Queue (Q), ft/ln (95 th percentile)							100.9		75.7	123.8	121.7	6.7	41.2		
Back of Queue (Q), veh/ln (95 th percentile)							4.0		3.0	5.0	4.9	0.3	1.6		
Queue Storage Ratio (RQ) (95 th percentile)							0.00		0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh							40.3		40.0	4.8	4.8	3.8	1.9		
Incremental Delay (d ₂), s/veh							2.2		1.6	0.7	0.7	0.0	0.3		
Initial Queue Delay (d ₃), s/veh							0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh							42.6		41.6	5.5	5.5	3.8	2.2		
Level of Service (LOS)							D		D	A	A	A	A		
Approach Delay, s/veh / LOS				0.0			42.2	D	5.5	A	2.3	A			
Intersection Delay, s/veh / LOS				7.2					A						
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.15	B		2.31	B		1.85	B		0.61	A	
Bicycle LOS Score / LOS								F		1.25	A		1.27	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future - PM	PHF	0.92	
Urban Street	Atlantic / S. Cecilia	Analysis Year	2021	Analysis Period	1 > 16:45	
Intersection	Interesction #19	File Name	19PM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				78		47		779	43	51	855	

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	4.5	65.7	6.3	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

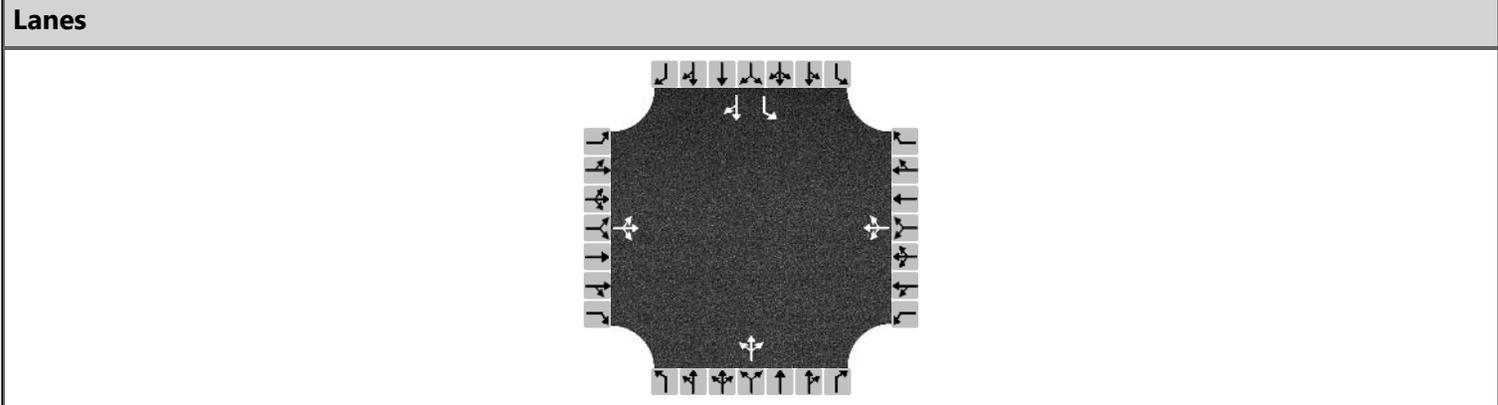
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				10.8		70.2	9.0	79.2
Change Period, ($Y+R_c$), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.3		0.0	3.1	0.0
Queue Clearance Time (g_s), s				6.1			2.6	
Green Extension Time (g_e), s				0.2		0.0	0.1	0.0
Phase Call Probability				1.00			0.75	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5	2	
Adjusted Flow Rate (v), veh/h				85		51		451	443	55	929	
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1865	1810	1809	
Queue Service Time (g_s), s				4.1		2.7		14.1	7.6	0.6	5.3	
Cycle Queue Clearance Time (g_c), s				4.1		2.7		14.1	7.6	0.6	5.3	
Green Ratio (g/C)				0.07		0.07		0.73	0.73	0.80	0.83	
Capacity (c), veh/h				128		114		1386	1360	532	3001	
Volume-to-Capacity Ratio (X)				0.664		0.450		0.325	0.325	0.104	0.310	
Back of Queue (Q), ft/ln (95 th percentile)				85.9		50.3		108.3	106.5	4.9	37.6	
Back of Queue (Q), veh/ln (95 th percentile)				3.4		2.0		4.3	4.3	0.2	1.5	
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00	0.00	
Uniform Delay (d_1), s/veh				40.8		40.1		4.3	4.3	3.4	1.8	
Incremental Delay (d_2), s/veh				2.2		1.0		0.6	0.6	0.0	0.3	
Initial Queue Delay (d_3), s/veh				0.0		0.0		0.0	0.0	0.0	0.0	
Control Delay (d), s/veh				43.0		41.2		4.9	5.0	3.4	2.0	
Level of Service (LOS)				D		D		A	A	A	A	
Approach Delay, s/veh / LOS	0.0			42.3		D		4.9	A	2.1	A	
Intersection Delay, s/veh / LOS				6.1						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.85	B	0.61	A
Bicycle LOS Score / LOS				F	1.22	A	1.30	A

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/13/2019	East/West Street	Elizabeth Street
Analysis Year	2021	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Future - AM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	3	50	0	72	68	78	1	277	105	66	281	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	58			237			416			72 310		
Percent Heavy Vehicles	2			2			2			2 2		

Departure Headway and Service Time

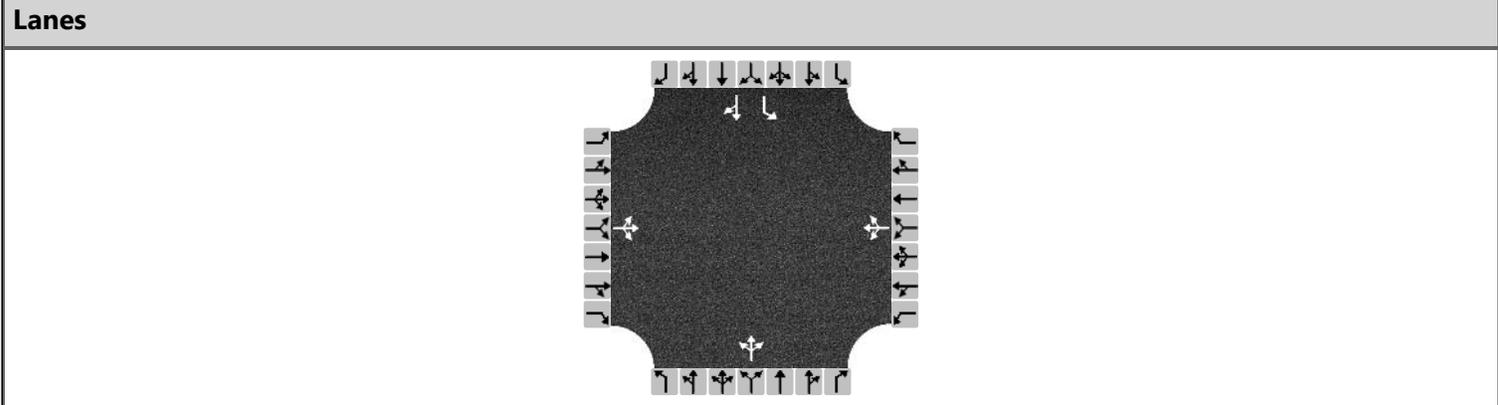
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.051			0.211			0.370			0.064	0.275	
Final Departure Headway, hd (s)	6.67			6.01			5.43			6.55	6.03	
Final Degree of Utilization, x	0.107			0.396			0.628			0.131	0.519	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	4.67			4.01			3.43			4.25	3.73	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	58			237			416			72	310	
Capacity	540			599			663			550	597	
95% Queue Length, Q ₉₅ (veh)	0.4			1.9			4.4			0.4	3.0	
Control Delay (s/veh)	10.5			12.9			17.1			10.2	15.1	
Level of Service, LOS	B			B			C			B	C	
Approach Delay (s/veh)	10.5			12.9			17.1			14.1		
Approach LOS	B			B			C			B		
Intersection Delay, s/veh LOS	14.8						B					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/13/2019	East/West Street	Elizabeth Street
Analysis Year	2021	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Future - PM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	4	63	0	84	68	46	0	331	85	48	354	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L	TR	
Flow Rate, v (veh/h)	73			215			452			52	389	
Percent Heavy Vehicles	2			2			2			2	2	

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.065			0.191			0.402			0.046	0.346	
Final Departure Headway, hd (s)	7.02			6.49			5.66			6.68	6.17	
Final Degree of Utilization, x	0.142			0.388			0.710			0.097	0.667	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	5.02			4.49			3.66			4.38	3.87	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	73			215			452			52	389	
Capacity	513			555			637			539	584	
95% Queue Length, Q ₉₅ (veh)	0.5			1.8			5.9			0.3	5.0	
Control Delay (s/veh)	11.2			13.5			21.3			10.1	20.3	
Level of Service, LOS	B			B			C			B	C	
Approach Delay (s/veh)	11.2			13.5			21.3			19.1		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	18.4						C					

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project- AM	PHF	0.92
Urban Street	Otis / Live Oak	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #8	File Name	08AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	27	61	31	53	57	85	29	473	63	69	440	18

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	67.2	13.8	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0		
				Red	1.0	1.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		18.3		18.3		71.7		71.7
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.4		3.4		0.0		0.0
Queue Clearance Time (g _s), s		7.9		13.2				
Green Extension Time (g _e), s		0.7		0.6		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	129			212			614			573		
Adjusted Saturation Flow Rate (s), veh/h/ln	1717			1645			1810			1676		
Queue Service Time (g _s), s	0.0			5.2			0.0			0.0		
Cycle Queue Clearance Time (g _c), s	5.9			11.2			11.2			9.9		
Green Ratio (g/C)	0.15			0.15			0.75			0.75		
Capacity (c), veh/h	312			303			1394			1297		
Volume-to-Capacity Ratio (X)	0.415			0.700			0.441			0.442		
Back of Queue (Q), ft/ln (95 th percentile)	117.4			202.4			168.1			153		
Back of Queue (Q), veh/ln (95 th percentile)	4.7			8.1			6.7			6.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	34.8			36.9			4.3			4.1		
Incremental Delay (d ₂), s/veh	0.3			1.1			1.0			1.1		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	35.1			38.0			5.3			5.2		
Level of Service (LOS)	D			D			A			A		
Approach Delay, s/veh / LOS	35.1	D		38.0	D		5.3	A		5.2	A	
Intersection Delay, s/veh / LOS	12.3						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.71	B	1.71	B	1.61	B	1.61	B
Bicycle LOS Score / LOS	0.70	A	0.84	A	1.50	B	1.43	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Live Oak	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #8	File Name	08PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	13	58	18	42	43	47	20	336	48	51	388	22

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	71.1	9.9	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0				

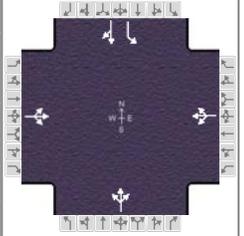
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		8.0
Phase Duration, s		14.4		14.4		75.6		75.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.2		3.2		0.0		0.0
Queue Clearance Time (g _s), s		6.5		9.5				
Green Extension Time (g _e), s		0.4		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	97			143			439			501		
Adjusted Saturation Flow Rate (s), veh/h/ln	1792			1647			1814			1748		
Queue Service Time (g _s), s	0.0			3.1			0.0			0.0		
Cycle Queue Clearance Time (g _c), s	4.5			7.5			5.8			6.9		
Green Ratio (g/C)	0.11			0.11			0.79			0.79		
Capacity (c), veh/h	243			234			1475			1425		
Volume-to-Capacity Ratio (X)	0.398			0.613			0.298			0.352		
Back of Queue (Q), ft/ln (95 th percentile)	89.1			137.9			65.5			78.6		
Back of Queue (Q), veh/ln (95 th percentile)	3.6			5.5			2.6			3.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	37.6			38.9			2.6			2.7		
Incremental Delay (d ₂), s/veh	0.4			1.0			0.5			0.7		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	38.0			39.9			3.1			3.4		
Level of Service (LOS)	D			D			A			A		
Approach Delay, s/veh / LOS	38.0	D		39.9	D		3.1	A		3.4	A	
Intersection Delay, s/veh / LOS	10.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.72	B	1.72	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.65	A	0.72	A	1.21	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #9	File Name	09AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	16	110	14	181	109	133	6	347	166	87	356	14

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	55.5	25.5	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0		
				Red	1.0	1.0	0.0	0.0	0.0	0.0		

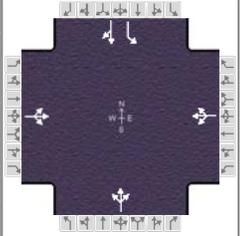
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.4		3.4		0.0		0.0
Queue Clearance Time (g _s), s		7.7		27.5				
Green Extension Time (g _e), s		1.4		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	152			460			564			95 402		
Adjusted Saturation Flow Rate (s), veh/h/ln	1779			1520			1792			865 1887		
Queue Service Time (g _s), s	0.0			19.8			0.0			6.2 9.3		
Cycle Queue Clearance Time (g _c), s	5.7			25.5			15.8			22.0 9.3		
Green Ratio (g/C)	0.28			0.28			0.62			0.62 0.62		
Capacity (c), veh/h	549			488			1145			462 1164		
Volume-to-Capacity Ratio (X)	0.277			0.943			0.493			0.205 0.346		
Back of Queue (Q), ft/ln (95 th percentile)	112.9			492.8			255.6			59.7 170.7		
Back of Queue (Q), veh/ln (95 th percentile)	4.5			19.7			10.2			2.4 6.8		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	25.2			32.9			9.6			15.8 8.4		
Incremental Delay (d ₂), s/veh	0.1			26.7			1.5			1.0 0.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	25.3			59.6			11.2			16.8 9.2		
Level of Service (LOS)	C			E			B			B A		
Approach Delay, s/veh / LOS	25.3	C		59.6	E		11.2	B		10.7	B	
Intersection Delay, s/veh / LOS	25.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.92	B	1.65	B	1.65	B
Bicycle LOS Score / LOS	0.74	A	1.25	A	1.42	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Clara	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #9	File Name	09PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	11	117	6	141	93	80	5	293	129	95	324	22

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	59.0	22.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0

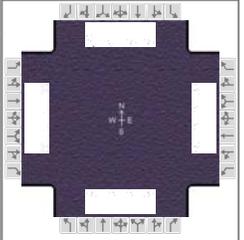
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		8.0		6.0
Phase Duration, s		26.5		26.5		63.5		63.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		7.7		21.5				
Green Extension Time (g _e), s		1.0		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.69				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	146			341			464			103 376		
Adjusted Saturation Flow Rate (s), veh/h/ln	1854			1527			1798			948 1879		
Queue Service Time (g _s), s	0.0			13.8			0.0			5.1 7.8		
Cycle Queue Clearance Time (g _c), s	5.7			19.5			10.8			15.9 7.8		
Green Ratio (g/C)	0.24			0.24			0.66			0.66 0.66		
Capacity (c), veh/h	497			432			1219			588 1231		
Volume-to-Capacity Ratio (X)	0.293			0.791			0.381			0.176 0.305		
Back of Queue (Q), ft/ln (95 th percentile)	114.4			312.5			181.5			51.4 135.9		
Back of Queue (Q), veh/ln (95 th percentile)	4.6			12.5			7.3			2.1 5.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00 0.00		
Uniform Delay (d ₁), s/veh	27.8			32.9			7.2			10.9 6.7		
Incremental Delay (d ₂), s/veh	0.1			6.5			0.9			0.7 0.6		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0 0.0		
Control Delay (d), s/veh	28.0			39.4			8.1			11.5 7.3		
Level of Service (LOS)	C			D			A			B A		
Approach Delay, s/veh / LOS	28.0	C		39.4	D		8.1	A		8.2	A	
Intersection Delay, s/veh / LOS	17.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.70	B	1.93	B	1.64	B	1.64	B
Bicycle LOS Score / LOS	0.73	A	1.05	A	1.25	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	184	871	225	195	992	104	170	847	133	148	681	89

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	10.3	30.5	6.0	2.5	22.7	0.0					
	Yellow	3.5	3.5	3.5	0.0	3.5	0.0					
	Red	1.0	1.0	1.0	0.0	1.0	0.0					

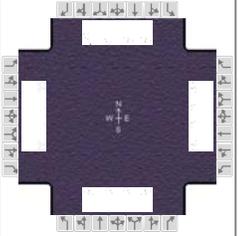
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	14.8	35.0	14.8	35.0	13.0	29.7	10.5	27.2
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	11.9		12.3		10.5	24.1	6.0	21.5
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.1	0.1	1.2
Phase Call Probability	0.99		1.00		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	200	947	245	212	1078	113	185	921	145	161	427	410
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1823
Queue Service Time (g _s), s	9.9	21.1	10.7	10.3	25.3	4.5	8.5	22.1	5.4	4.0	19.5	19.5
Cycle Queue Clearance Time (g _c), s	9.9	21.1	10.7	10.3	25.3	4.5	8.5	22.1	5.4	4.0	19.5	19.5
Green Ratio (g/C)	0.11	0.34	0.34	0.11	0.34	0.34	0.09	0.28	0.39	0.07	0.25	0.25
Capacity (c), veh/h	206	1226	546	206	1226	546	171	1014	635	234	480	460
Volume-to-Capacity Ratio (X)	0.969	0.772	0.448	1.027	0.880	0.207	1.081	0.908	0.228	0.687	0.890	0.890
Back of Queue (Q), ft/ln (95 th percentile)	294.5	361.4	191.4	333.8	438.3	79.2	327.2	401.7	86.2	78.7	405.3	394.3
Back of Queue (Q), veh/ln (95 th percentile)	11.8	14.5	7.7	13.4	17.5	3.2	13.1	16.1	3.4	3.1	16.2	15.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.7	26.6	23.2	39.9	28.0	21.2	40.8	31.3	18.1	41.1	32.4	32.4
Incremental Delay (d ₂), s/veh	53.3	4.8	2.7	69.8	9.2	0.9	92.2	10.8	0.1	1.3	16.8	17.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	93.0	31.4	25.8	109.7	37.2	22.0	132.9	42.1	18.2	42.4	49.2	49.9
Level of Service (LOS)	F	C	C	F	D	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	39.3		D	46.9		D	52.7		D	48.4		D
Intersection Delay, s/veh / LOS	46.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.64	B	1.65	B	1.52	B	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	132	869	147	175	767	146	152	598	127	208	727	92

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	8.8	1.0	30.5	7.7	0.8	23.3			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	3.5			
				Red	1.0	0.0	1.0	1.0	0.0	1.0			

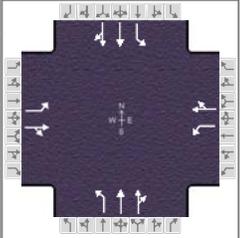
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	13.3	35.0	14.2	36.0	13.0	28.6	12.2	27.8
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	9.0		11.4		10.2	16.4	7.7	23.0
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.3
Phase Call Probability	0.97		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.39	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	143	945	160	190	834	159	165	650	138	226	454	436
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1825
Queue Service Time (g _s), s	7.0	21.0	6.6	9.4	17.5	6.4	8.2	14.4	5.3	5.7	21.0	21.0
Cycle Queue Clearance Time (g _c), s	7.0	21.0	6.6	9.4	17.5	6.4	8.2	14.4	5.3	5.7	21.0	21.0
Green Ratio (g/C)	0.10	0.34	0.34	0.11	0.35	0.35	0.09	0.27	0.38	0.09	0.26	0.26
Capacity (c), veh/h	176	1226	546	195	1265	563	171	969	605	300	491	472
Volume-to-Capacity Ratio (X)	0.814	0.770	0.293	0.973	0.659	0.282	0.967	0.671	0.228	0.754	0.924	0.924
Back of Queue (Q), ft/ln (95 th percentile)	177.6	360.6	116.3	287.6	302.9	112.7	261.3	257.9	85.3	120.8	451.1	439
Back of Queue (Q), veh/ln (95 th percentile)	7.1	14.4	4.7	11.5	12.1	4.5	10.5	10.3	3.4	4.8	18.0	17.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.8	26.6	21.8	40.0	24.7	21.1	40.6	29.4	19.2	40.2	32.5	32.5
Incremental Delay (d ₂), s/veh	18.7	4.7	1.4	56.1	2.7	1.3	58.5	1.4	0.1	7.1	22.6	23.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	58.5	31.3	23.2	96.1	27.4	22.4	99.1	30.9	19.3	47.4	55.1	55.8
Level of Service (LOS)	E	C	C	F	C	C	F	C	B	D	E	E
Approach Delay, s/veh / LOS	33.4	C		37.8	D		41.0	D		53.8	D	
Intersection Delay, s/veh / LOS	41.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.52	B	1.46	A	1.27	A	1.41	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Live Oak	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersecion #14	File Name	14AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	67	176	72	101	147	65	57	995	140	74	837	66

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2	Green	4.7	0.5	48.4	22.9	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

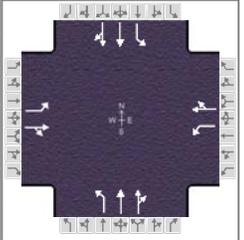
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		27.4		27.4	9.2	52.9	9.7	53.4
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		16.9		22.3	5.0		5.9	
Green Extension Time (g _e), s		1.2		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.79		0.87	
Max Out Probability		0.11		1.00	0.23		0.97	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	73	270		110	230		62	630	604	80	497	484
Adjusted Saturation Flow Rate (s), veh/h/ln	1168	1806		1127	1801		1810	1900	1818	1810	1900	1851
Queue Service Time (g _s), s	5.1	11.8		8.5	9.8		3.0	20.6	20.7	3.9	14.6	14.6
Cycle Queue Clearance Time (g _c), s	14.9	11.8		20.3	9.8		3.0	20.6	20.7	3.9	14.6	14.6
Green Ratio (g/C)	0.25	0.25		0.25	0.25		0.05	0.54	0.54	0.06	0.54	0.54
Capacity (c), veh/h	250	460		220	458		95	1022	977	104	1032	1005
Volume-to-Capacity Ratio (X)	0.291	0.586		0.499	0.503		0.652	0.616	0.618	0.770	0.482	0.482
Back of Queue (Q), ft/ln (95 th percentile)	66.1	221.7		107.1	191.1		62.7	340.5	330.4	83.3	252.7	247.9
Back of Queue (Q), veh/ln (95 th percentile)	2.6	8.9		4.3	7.6		2.5	13.6	13.2	3.3	10.1	9.9
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	35.0	29.4		38.3	28.7		41.8	14.4	14.4	41.8	12.7	12.7
Incremental Delay (d ₂), s/veh	0.2	0.7		0.7	0.3		2.8	2.8	2.9	4.4	1.6	1.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	35.3	30.1		38.9	29.0		44.6	17.2	17.3	46.2	14.3	14.4
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.2	C		32.2	C		18.6	B		16.8	B	
Intersection Delay, s/veh / LOS	20.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.05	A	1.05	A	1.56	B	1.36	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / Live Oak	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #14	File Name	14PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	121	44	141	101	57	36	712	108	74	908	69

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.7	1.5	50.1	21.2	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

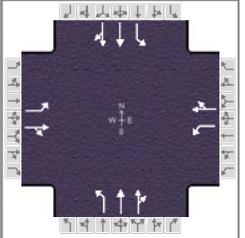
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		25.7		25.7	8.2	54.6	9.7	56.1
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		13.1		20.5	3.9		5.9	
Green Extension Time (g _e), s		1.1		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.62		0.87	
Max Out Probability		0.01		0.44	0.00		0.08	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	59	179		153	172		39	456	435	80	538	524
Adjusted Saturation Flow Rate (s), veh/h/ln	1232	1813		1224	1784		1810	1900	1812	1810	1900	1852
Queue Service Time (g _s), s	3.8	7.6		10.9	7.3		1.9	12.6	12.6	3.9	15.2	15.2
Cycle Queue Clearance Time (g _c), s	11.1	7.6		18.5	7.3		1.9	12.6	12.6	3.9	15.2	15.2
Green Ratio (g/C)	0.24	0.24		0.24	0.24		0.04	0.56	0.56	0.06	0.57	0.57
Capacity (c), veh/h	270	426		266	420		75	1058	1009	104	1089	1062
Volume-to-Capacity Ratio (X)	0.217	0.421		0.577	0.409		0.520	0.431	0.431	0.770	0.494	0.494
Back of Queue (Q), ft/ln (95 th percentile)	51.8	148.8		148.6	142.1		39.5	221.9	214.4	83.3	255.7	251
Back of Queue (Q), veh/ln (95 th percentile)	2.1	6.0		5.9	5.7		1.6	8.9	8.6	3.3	10.2	10.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	33.8	29.2		37.0	29.1		42.2	11.6	11.6	41.8	11.4	11.4
Incremental Delay (d ₂), s/veh	0.1	0.2		0.7	0.2		2.1	1.3	1.3	4.4	1.6	1.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	34.0	29.5		37.8	29.4		44.3	12.9	13.0	46.2	13.0	13.1
Level of Service (LOS)	C	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	30.6	C		33.3	C		14.2	B		15.4	B	
Intersection Delay, s/veh / LOS	18.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.88	B	1.88	B
Bicycle LOS Score / LOS	0.88	A	1.02	A	1.26	A	1.43	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersecion #15	File Name	15AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	112	157	110	102	226	138	73	963	151	132	806	138

Signal Information				Signal Timing (s)																				
Cycle, s	90.0	Reference Phase	2	Green	5.2	1.3	44.5	25.5	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

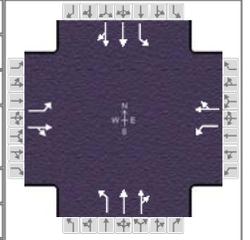
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	9.7	49.0	11.0	50.3
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.5		3.5	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		27.5		23.3	5.9		8.5	
Green Extension Time (g _e), s		0.0		0.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.86		0.97	
Max Out Probability		1.00		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	122	290		111	396		79	619	592	143	527	500
Adjusted Saturation Flow Rate (s), veh/h/ln	1004	1769		1106	1779		1810	1900	1810	1810	1900	1803
Queue Service Time (g _s), s	7.0	12.7		8.6	18.5		3.9	22.0	22.1	6.5	16.9	16.9
Cycle Queue Clearance Time (g _c), s	25.5	12.7		21.3	18.5		3.9	22.0	22.1	6.5	16.9	16.9
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.06	0.49	0.49	0.07	0.51	0.51
Capacity (c), veh/h	159	501		238	504		104	939	895	131	967	918
Volume-to-Capacity Ratio (X)	0.767	0.579		0.466	0.785		0.763	0.659	0.661	1.098	0.544	0.544
Back of Queue (Q), ft/ln (95 th percentile)	157.1	229.3		105.7	341.2		94.1	369.7	358	283	292	280.8
Back of Queue (Q), veh/ln (95 th percentile)	6.3	9.2		4.2	13.6		3.8	14.8	14.3	11.3	11.7	11.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.7	27.6		36.8	29.7		41.8	17.1	17.1	41.8	15.0	15.0
Incremental Delay (d ₂), s/veh	18.2	1.1		0.5	7.3		13.7	3.6	3.8	107.4	2.2	2.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	61.0	28.8		37.3	37.1		55.5	20.7	20.9	149.1	17.2	17.3
Level of Service (LOS)	E	C		D	D		E	C	C	F	B	B
Approach Delay, s/veh / LOS	38.3		D	37.1		D	22.9		C	33.4		C
Intersection Delay, s/veh / LOS	30.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.17	A	1.32	A	1.55	B	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / Clara	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #15	File Name	15PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	64	232	72	106	230	98	79	741	138	113	925	82

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	5.5	1.0	44.5	25.5	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0		
				Red	1.0	0.0	1.0	1.0	0.0	0.0		

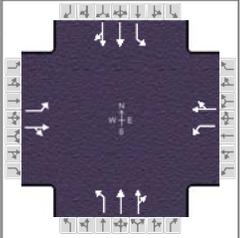
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	10.0	49.0	11.0	50.0
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		23.7		25.8	6.2		8.1	
Green Extension Time (g _e), s		0.6		0.0	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.88		0.95	
Max Out Probability		1.00		1.00	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	70	330		115	357		86	491	464	123	555	539
Adjusted Saturation Flow Rate (s), veh/h/ln	1041	1822		1066	1803		1810	1900	1796	1810	1900	1845
Queue Service Time (g _s), s	5.8	14.3		9.5	15.9		4.2	15.9	15.9	6.1	18.4	18.4
Cycle Queue Clearance Time (g _c), s	21.7	14.3		23.8	15.9		4.2	15.9	15.9	6.1	18.4	18.4
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.06	0.49	0.49	0.07	0.51	0.51
Capacity (c), veh/h	191	516		213	511		110	939	888	131	961	933
Volume-to-Capacity Ratio (X)	0.364	0.640		0.541	0.698		0.778	0.523	0.523	0.940	0.578	0.578
Back of Queue (Q), ft/ln (95 th percentile)	66.2	262.8		115.7	292.8		107.4	278.9	267.5	210.2	313.5	306.8
Back of Queue (Q), veh/ln (95 th percentile)	2.6	10.5		4.6	11.7		4.3	11.2	10.7	8.4	12.5	12.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.5	28.2		38.7	28.8		41.7	15.5	15.5	41.6	15.5	15.5
Incremental Delay (d ₂), s/veh	0.4	2.1		1.5	3.5		17.9	2.1	2.2	59.7	2.5	2.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.9	30.3		40.2	32.3		59.6	17.6	17.7	101.2	18.1	18.1
Level of Service (LOS)	D	C		D	C		E	B	B	F	B	B
Approach Delay, s/veh / LOS	31.8	C		34.3	C		21.1	C		26.5	C	
Intersection Delay, s/veh / LOS	26.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.90	B	1.89	B
Bicycle LOS Score / LOS	1.15	A	1.27	A	1.35	A	1.49	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersecion #16	File Name	16AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	135	142	53	90	84	155	32	899	99	88	801	99

Signal Information				Signal Timing (s)																				
Cycle, s	90.0	Reference Phase	2	Green	3.5	2.6	45.3	25.1	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

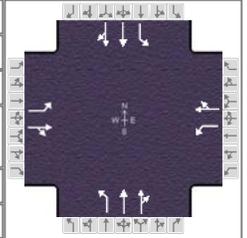
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		29.6		29.6	8.0	49.8	10.6	52.4
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.5		3.5	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		25.0		17.2	3.7		6.7	
Green Extension Time (g _e), s		0.1		1.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.58		0.91	
Max Out Probability		1.00		0.15	0.93		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	147	212		98	260		35	552	533	96	499	479
Adjusted Saturation Flow Rate (s), veh/h/ln	1137	1811		1188	1701		1810	1900	1833	1810	1900	1826
Queue Service Time (g _s), s	11.3	8.6		6.6	11.7		1.7	18.3	18.3	4.7	15.0	15.0
Cycle Queue Clearance Time (g _c), s	23.0	8.6		15.2	11.7		1.7	18.3	18.3	4.7	15.0	15.0
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.04	0.50	0.50	0.07	0.53	0.53
Capacity (c), veh/h	250	506		299	475		70	956	922	122	1011	971
Volume-to-Capacity Ratio (X)	0.587	0.419		0.328	0.547		0.496	0.577	0.578	0.783	0.494	0.494
Back of Queue (Q), ft/ln (95 th percentile)	148	167.2		86	209.7		35.2	313.6	305.5	121.4	260.5	253
Back of Queue (Q), veh/ln (95 th percentile)	5.9	6.7		3.4	8.4		1.4	12.5	12.2	4.9	10.4	10.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	37.4	26.5		32.7	27.6		42.4	15.7	15.7	41.3	13.4	13.4
Incremental Delay (d ₂), s/veh	2.2	0.2		0.2	0.7		2.0	2.5	2.6	19.4	1.7	1.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.6	26.7		32.9	28.3		44.4	18.2	18.3	60.7	15.1	15.2
Level of Service (LOS)	D	C		C	C		D	B	B	E	B	B
Approach Delay, s/veh / LOS	32.0	C		29.5	C		19.1	B		19.2	B	
Intersection Delay, s/veh / LOS	22.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	1.89	B	1.89	B
Bicycle LOS Score / LOS	1.08	A	1.08	A	1.41	A	1.37	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / Elizabeth	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #16	File Name	16PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	99	109	79	55	92	99	57	752	66	101	863	118

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	4.7	2.2	49.4	20.1	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

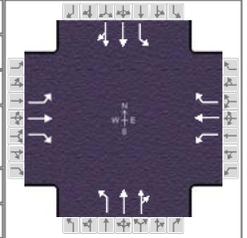
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		6.0		6.0	2.0	4.0	2.0	4.0
Phase Duration, s		24.6		24.6	9.2	53.9	11.4	56.1
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		19.3		15.2	5.0		7.4	
Green Extension Time (g _e), s		0.9		1.1	0.0	0.0	0.1	0.0
Phase Call Probability		1.00		1.00	0.79		0.94	
Max Out Probability		0.26		0.04	0.00		0.17	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	108	204		60	208		62	451	438	110	545	522
Adjusted Saturation Flow Rate (s), veh/h/ln	1193	1766		1196	1738		1810	1900	1846	1810	1900	1819
Queue Service Time (g _s), s	7.9	9.1		4.2	9.5		3.0	12.6	12.6	5.4	15.4	15.4
Cycle Queue Clearance Time (g _c), s	17.3	9.1		13.2	9.5		3.0	12.6	12.6	5.4	15.4	15.4
Green Ratio (g/C)	0.22	0.22		0.22	0.22		0.05	0.55	0.55	0.08	0.57	0.57
Capacity (c), veh/h	222	395		227	389		95	1043	1014	140	1090	1044
Volume-to-Capacity Ratio (X)	0.485	0.517		0.264	0.534		0.652	0.432	0.432	0.786	0.500	0.500
Back of Queue (Q), ft/ln (95 th percentile)	104.7	175.9		55.2	179.6		62.7	223.5	218.9	111.4	259	251
Back of Queue (Q), veh/ln (95 th percentile)	4.2	7.0		2.2	7.2		2.5	8.9	8.8	4.5	10.4	10.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.4	30.7		36.5	30.8		41.8	12.0	12.0	40.8	11.5	11.5
Incremental Delay (d ₂), s/veh	0.6	0.4		0.2	0.4		2.8	1.3	1.3	3.7	1.6	1.7
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	39.0	31.1		36.7	31.2		44.6	13.3	13.3	44.5	13.1	13.2
Level of Service (LOS)	D	C		D	C		D	B	B	D	B	B
Approach Delay, s/veh / LOS	33.8	C		32.4	C		15.4	B		16.1	B	
Intersection Delay, s/veh / LOS	19.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	1.89	B	1.88	B
Bicycle LOS Score / LOS	1.00	A	0.93	A	1.27	A	1.46	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersecion #17	File Name	17AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	182	221	98	75	223	97	82	763	36	74	727	117

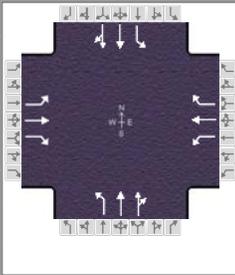
Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	5.2	0.5	45.3	25.5	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
				Red	1.0	0.0	1.0	1.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8	5	2	1	6
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		30.0		30.0	10.2	50.3	9.7	49.8
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.4		3.4	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		26.7		16.9	6.4		5.9	
Green Extension Time (g _e), s		0.0		1.7	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.89		0.87	
Max Out Probability		1.00		0.20	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	198	240	107	82	242	105	89	438	431	80	470	447
Adjusted Saturation Flow Rate (s), veh/h/ln	1156	1900	1610	1158	1900	1610	1810	1900	1869	1810	1900	1807
Queue Service Time (g _s), s	15.3	9.3	4.6	5.6	9.4	4.5	4.4	13.2	13.2	3.9	14.7	14.7
Cycle Queue Clearance Time (g _c), s	24.7	9.3	4.6	14.9	9.4	4.5	4.4	13.2	13.2	3.9	14.7	14.7
Green Ratio (g/C)	0.28	0.28	0.28	0.28	0.28	0.28	0.06	0.51	0.51	0.06	0.50	0.50
Capacity (c), veh/h	286	538	456	288	538	456	114	967	951	104	957	910
Volume-to-Capacity Ratio (X)	0.691	0.446	0.233	0.283	0.450	0.231	0.780	0.453	0.453	0.770	0.491	0.491
Back of Queue (Q), ft/ln (95 th percentile)	205.6	187.3	77.6	71.1	191.4	77.9	113.4	237.5	234.7	96.8	260.1	250.7
Back of Queue (Q), veh/ln (95 th percentile)	8.2	7.5	3.1	2.8	7.7	3.1	4.5	9.5	9.4	3.9	10.4	10.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	36.6	26.5	24.7	32.6	26.5	24.7	41.5	14.1	14.1	41.8	14.7	14.7
Incremental Delay (d ₂), s/veh	5.8	0.2	0.1	0.2	0.2	0.1	19.4	1.5	1.6	14.8	1.8	1.9
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	42.5	26.7	24.8	32.8	26.7	24.8	60.9	15.6	15.7	56.6	16.5	16.6
Level of Service (LOS)	D	C	C	C	C	C	E	B	B	E	B	B
Approach Delay, s/veh / LOS	32.1	C		27.4	C		19.9	B		19.8	B	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.28	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.39	A	1.20	A	1.28	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92	
Urban Street	Atlantic / Santa Ana	Analysis Year	2021	Analysis Period	1 > 16:30	
Intersection	Intersecion #17	File Name	17PM - Future with Project.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	168	229	46	87	185	51	91	704	58	89	748	147

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	6.2	0.1	46.5	23.8	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0		
				Red	1.0	0.0	1.0	1.0	0.0	0.0		

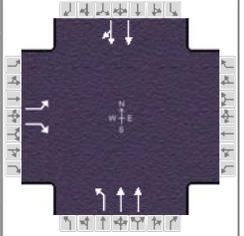
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4	1	6	5	2
Case Number		5.0		5.0	2.0	4.0	2.0	4.0
Phase Duration, s		28.3		28.3	10.8	51.1	10.7	51.0
Change Period, (Y+R _c), s		4.5		4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s		3.3		3.3	3.1	0.0	3.1	0.0
Queue Clearance Time (g _s), s		23.1		18.8	6.8		6.7	
Green Extension Time (g _e), s		0.6		1.3	0.0	0.0	0.0	0.0
Phase Call Probability		1.00		1.00	0.92		0.91	
Max Out Probability		1.00		0.29	1.00		1.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	183	249	50	95	201	55	99	420	409	97	501	472
Adjusted Saturation Flow Rate (s), veh/h/ln	1200	1900	1610	1149	1900	1610	1810	1900	1849	1810	1900	1791
Queue Service Time (g _s), s	13.3	10.0	2.1	6.8	7.8	2.4	4.8	12.3	12.3	4.7	15.6	15.6
Cycle Queue Clearance Time (g _c), s	21.1	10.0	2.1	16.8	7.8	2.4	4.8	12.3	12.3	4.7	15.6	15.6
Green Ratio (g/C)	0.26	0.26	0.26	0.26	0.26	0.26	0.07	0.52	0.52	0.07	0.52	0.52
Capacity (c), veh/h	292	502	425	256	502	425	126	983	957	124	981	924
Volume-to-Capacity Ratio (X)	0.625	0.496	0.118	0.369	0.401	0.130	0.783	0.427	0.427	0.782	0.511	0.511
Back of Queue (Q), ft/ln (95 th percentile)	179.7	199	36.2	86.9	160.6	40.9	113.7	223.4	219	110	271.1	259.5
Back of Queue (Q), veh/ln (95 th percentile)	7.2	8.0	1.4	3.5	6.4	1.6	4.5	8.9	8.8	4.4	10.8	10.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	36.0	28.0	25.2	35.2	27.3	25.2	41.2	13.4	13.4	41.3	14.3	14.3
Incremental Delay (d ₂), s/veh	2.3	0.3	0.0	0.3	0.2	0.1	11.9	1.4	1.4	11.1	1.9	2.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	38.2	28.3	25.2	35.5	27.5	25.3	53.1	14.8	14.8	52.3	16.2	16.3
Level of Service (LOS)	D	C	C	D	C	C	D	B	B	D	B	B
Approach Delay, s/veh / LOS	31.8	C		29.3	C		18.9	B		19.5	B	
Intersection Delay, s/veh / LOS	22.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.29	B	2.29	B	2.08	B	2.08	B
Bicycle LOS Score / LOS	1.28	A	1.07	A	1.25	A	1.37	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / N. Cecilia	Analysis Year	2021	Analysis Period	1 > 7:30
Intersection	Intersecion #18	File Name	18AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	62		40				15	888			877	37

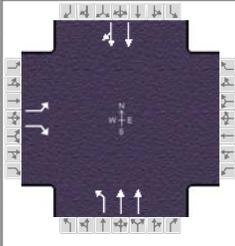
Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	2.0	68.5	6.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4			5	2		6
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			6.5	79.5		73.0
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.3			3.1	0.0		0.0
Queue Clearance Time (g _s), s		5.2			2.8			
Green Extension Time (g _e), s		0.2			0.0	0.0		0.0
Phase Call Probability		1.00			0.33			
Max Out Probability		0.00			0.00			

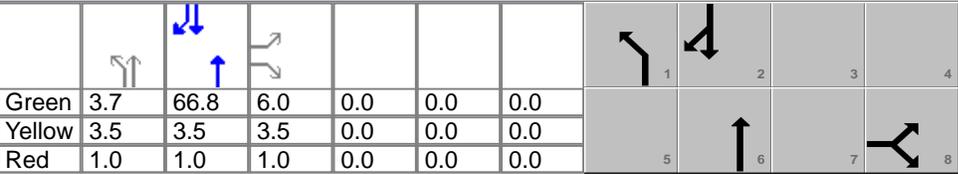
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7		14				5	2			6	16
Adjusted Flow Rate (v), veh/h	67		43				16	965			500	493
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1873
Queue Service Time (g _s), s	3.2		2.3				0.8	5.5			16.3	7.7
Cycle Queue Clearance Time (g _c), s	3.2		2.3				0.8	5.5			16.3	7.7
Green Ratio (g/C)	0.07		0.07				0.02	0.83			0.76	0.76
Capacity (c), veh/h	121		107				40	3015			1446	1425
Volume-to-Capacity Ratio (X)	0.559		0.405				0.404	0.320			0.346	0.346
Back of Queue (Q), ft/ln (95 th percentile)	67.3		42.7				17	37.3			100.1	98.8
Back of Queue (Q), veh/ln (95 th percentile)	2.7		1.7				0.7	1.5			4.0	4.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	40.7		40.3				43.4	1.7			3.5	3.5
Incremental Delay (d ₂), s/veh	1.5		0.9				2.4	0.3			0.7	0.7
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	42.2		41.2				45.8	2.0			4.1	4.2
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	41.8		D	0.0			2.7	A		4.2		A
Intersection Delay, s/veh / LOS	5.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.30	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92	
Urban Street	Atlantic / N. Cecilia	Analysis Year	2021	Analysis Period	1 > 17:00	
Intersection	Intersecion #18	File Name	18PM - Future with Project.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24		35				35	815			885	21

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	3.7	66.8	6.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
		Red	1.0	1.0	1.0	0.0	0.0	0.0				

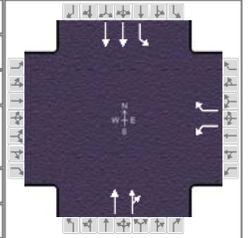
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8			1	6		2
Case Number		9.0			2.0	4.0		8.3
Phase Duration, s		10.5			8.2	79.5		71.3
Change Period, (Y+R _c), s		4.5			4.5	4.5		4.5
Max Allow Headway (MAH), s		3.4			3.1	0.0		0.0
Queue Clearance Time (g _s), s		4.0			3.9			
Green Extension Time (g _e), s		0.1			0.0	0.0		0.0
Phase Call Probability		1.00			0.61			
Max Out Probability		0.00			0.00			

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3		18				1	6			2	12
Adjusted Flow Rate (v), veh/h	26		38				38	886			494	490
Adjusted Saturation Flow Rate (s), veh/h/ln	1810		1610				1810	1809			1900	1884
Queue Service Time (g _s), s	1.2		2.0				1.9	4.9			16.0	8.2
Cycle Queue Clearance Time (g _c), s	1.2		2.0				1.9	4.9			16.0	8.2
Green Ratio (g/C)	0.07		0.07				0.04	0.83			0.74	0.74
Capacity (c), veh/h	121		107				74	3015			1411	1399
Volume-to-Capacity Ratio (X)	0.216		0.354				0.514	0.294			0.351	0.351
Back of Queue (Q), ft/ln (95 th percentile)	25.1		37.2				38.4	32.9			112.2	111.4
Back of Queue (Q), veh/ln (95 th percentile)	1.0		1.5				1.5	1.3			4.5	4.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00		0.00				0.00	0.00			0.00	0.00
Uniform Delay (d ₁), s/veh	39.8		40.1				42.3	1.7			4.0	4.0
Incremental Delay (d ₂), s/veh	0.3		0.7				2.0	0.2			0.7	0.7
Initial Queue Delay (d ₃), s/veh	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay (d), s/veh	40.1		40.9				44.3	1.9			4.7	4.7
Level of Service (LOS)	D		D				D	A			A	A
Approach Delay, s/veh / LOS	40.6		D	0.0			3.7	A		4.7		A
Intersection Delay, s/veh / LOS	5.4						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.31	B	2.15	B	0.61	A	1.84	B
Bicycle LOS Score / LOS		F			1.25	A	1.30	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / S. Cecilia	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Interesction #19	File Name	19AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				92		77			834	45	69	833

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	5.1	64.2	7.2	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

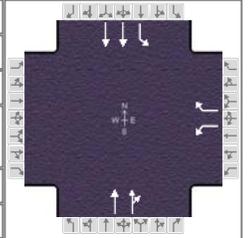
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				8		2	1	6
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				11.7		68.7	9.6	78.3
Change Period, (Y+R _c), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.4		0.0	3.1	0.0
Queue Clearance Time (g _s), s				6.8			2.8	
Green Extension Time (g _e), s				0.3		0.0	0.1	0.0
Phase Call Probability				1.00			0.85	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				3		18		2	12	1		6
Adjusted Flow Rate (v), veh/h				100		84		482	473	75		905
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1865	1810		1809
Queue Service Time (g _s), s				4.8		4.5		15.5	8.8	0.8		5.4
Cycle Queue Clearance Time (g _c), s				4.8		4.5		15.5	8.8	0.8		5.4
Green Ratio (g/C)				0.08		0.08		0.71	0.71	0.79		0.82
Capacity (c), veh/h				144		129		1356	1331	506		2967
Volume-to-Capacity Ratio (X)				0.692		0.651		0.356	0.356	0.148		0.305
Back of Queue (Q), ft/ln (95 th percentile)				100.9		84.1		129.9	127.8	7.5		42.3
Back of Queue (Q), veh/ln (95 th percentile)				4.0		3.4		5.2	5.1	0.3		1.7
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				40.3		40.2		4.9	4.9	4.0		1.9
Incremental Delay (d ₂), s/veh				2.2		2.1		0.7	0.7	0.0		0.3
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				42.5		42.3		5.7	5.7	4.0		2.2
Level of Service (LOS)				D		D		A	A	A		A
Approach Delay, s/veh / LOS	0.0			42.4		D		5.7	A	2.3		A
Intersection Delay, s/veh / LOS	7.3						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.85	B	0.61	A
Bicycle LOS Score / LOS				F	1.28	A	1.30	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / S. Cecilia	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersecion #19	File Name	19PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				78		49			785	43	52	860

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	4.5	65.6	6.4	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

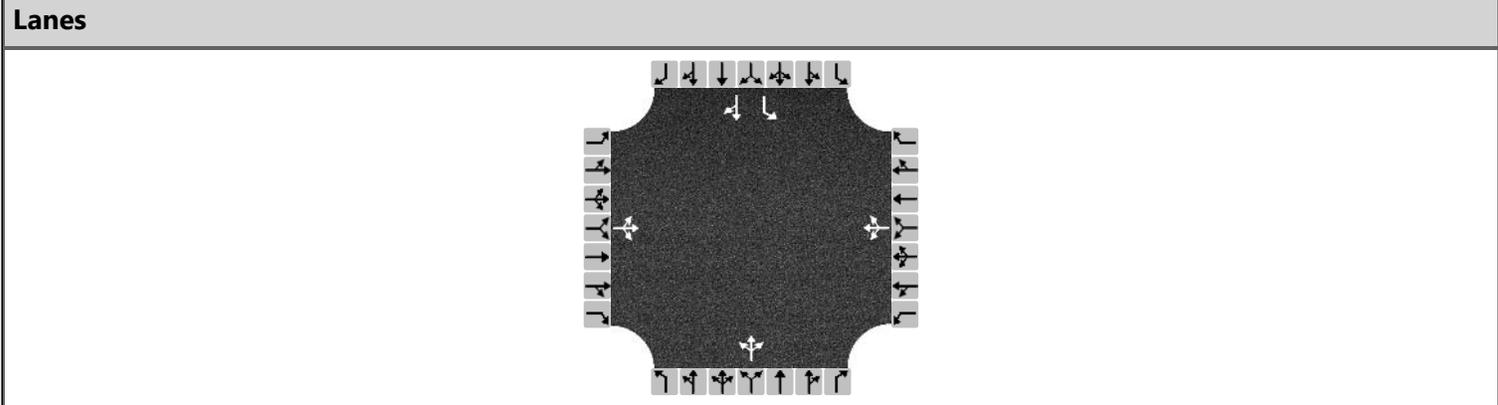
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase				4		6	5	2
Case Number				9.0		8.3	1.0	4.0
Phase Duration, s				10.9		70.1	9.0	79.1
Change Period, (Y+R _c), s				4.5		4.5	4.5	4.5
Max Allow Headway (MAH), s				3.3		0.0	3.1	0.0
Queue Clearance Time (g _s), s				6.1			2.6	
Green Extension Time (g _e), s				0.2		0.0	0.1	0.0
Phase Call Probability				1.00			0.76	
Max Out Probability				0.00			0.00	

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				7		14		6	16	5		2
Adjusted Flow Rate (v), veh/h				85		53		454	446	57		935
Adjusted Saturation Flow Rate (s), veh/h/ln				1810		1610		1900	1865	1810		1809
Queue Service Time (g _s), s				4.1		2.9		14.3	7.7	0.6		5.3
Cycle Queue Clearance Time (g _c), s				4.1		2.9		14.3	7.7	0.6		5.3
Green Ratio (g/C)				0.07		0.07		0.73	0.73	0.80		0.83
Capacity (c), veh/h				128		114		1385	1359	530		3000
Volume-to-Capacity Ratio (X)				0.664		0.469		0.328	0.328	0.107		0.312
Back of Queue (Q), ft/ln (95 th percentile)				85.9		52.5		109.2	107.4	4.9		37.8
Back of Queue (Q), veh/ln (95 th percentile)				3.4		2.1		4.4	4.3	0.2		1.5
Queue Storage Ratio (RQ) (95 th percentile)				0.00		0.00		0.00	0.00	0.00		0.00
Uniform Delay (d ₁), s/veh				40.8		40.2		4.3	4.3	3.4		1.8
Incremental Delay (d ₂), s/veh				2.2		1.1		0.6	0.6	0.0		0.3
Initial Queue Delay (d ₃), s/veh				0.0		0.0		0.0	0.0	0.0		0.0
Control Delay (d), s/veh				43.0		41.3		5.0	5.0	3.5		2.0
Level of Service (LOS)				D		D		A	A	A		A
Approach Delay, s/veh / LOS	0.0			42.3		D		5.0	A	2.1		A
Intersection Delay, s/veh / LOS				6.1						A		

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.15	B	2.31	B	1.85	B	0.61	A
Bicycle LOS Score / LOS				F	1.23	A	1.31	A

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/13/2019	East/West Street	Elizabeth Street
Analysis Year	2021	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Future with Project - AM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	3	50	0	72	68	78	1	277	105	75	360	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	58			237			416			82 396		
Percent Heavy Vehicles	2			2			2			2 2		

Departure Headway and Service Time

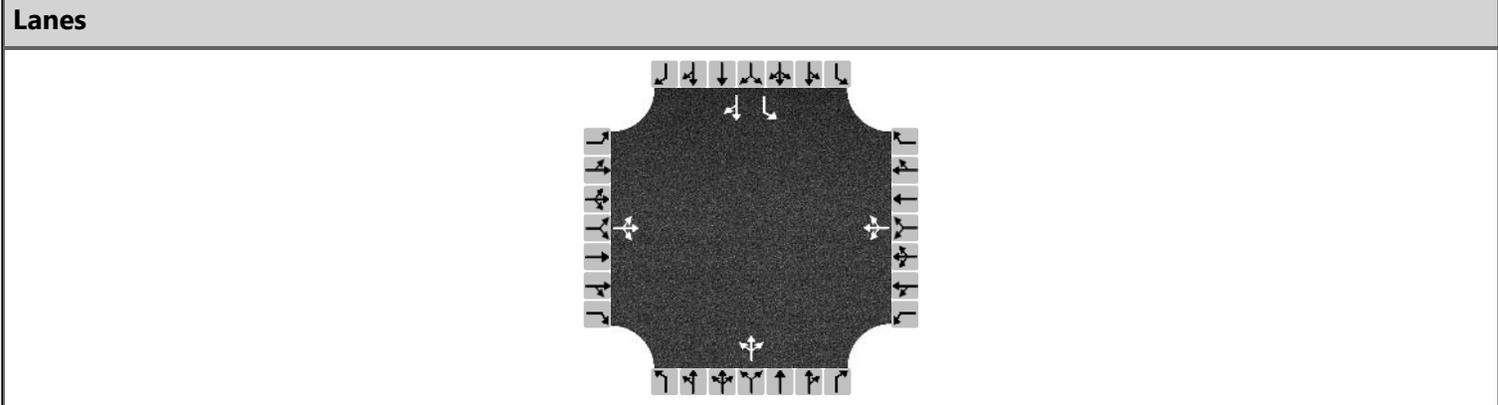
Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.051			0.211			0.370			0.072	0.352	
Final Departure Headway, hd (s)	7.00			6.28			5.63			6.62	6.11	
Final Degree of Utilization, x	0.112			0.413			0.651			0.150	0.671	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	5.00			4.28			3.63			4.32	3.81	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	58			237			416			82	396	
Capacity	514			574			640			544	590	
95% Queue Length, Q ₉₅ (veh)	0.4			2.0			4.8			0.5	5.1	
Control Delay (s/veh)	10.9			13.6			18.5			10.5	20.4	
Level of Service, LOS	B			B			C			B	C	
Approach Delay (s/veh)	10.9			13.6			18.5			18.7		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	17.2						C					

HCS7 All-Way Stop Control Report

General Information		Site Information	
Analyst	AS	Intersection	Intersection #20
Agency/Co.	LLG Engineers	Jurisdiction	City of Cudahy
Date Performed	12/13/2019	East/West Street	Elizabeth Street
Analysis Year	2021	North/South Street	Otis Avenue
Analysis Time Period (hrs)	0.25	Peak Hour Factor	0.92
Time Analyzed	Future with Project - PM		
Project Description	7801-7835 Otis Avenue Charter School		



Vehicle Volume and Adjustments

Approach	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Movement												
Volume	4	63	0	84	68	46	0	331	85	50	373	4
% Thrus in Shared Lane												
Lane	L1	L2	L3	L1	L2	L3	L1	L2	L3	L1	L2	L3
Configuration	LTR			LTR			LTR			L TR		
Flow Rate, v (veh/h)	73			215			452			54 410		
Percent Heavy Vehicles	2			2			2			2 2		

Departure Headway and Service Time

Initial Departure Headway, hd (s)	3.20			3.20			3.20			3.20	3.20	
Initial Degree of Utilization, x	0.065			0.191			0.402			0.048	0.364	
Final Departure Headway, hd (s)	7.10			6.56			5.71			6.70	6.18	
Final Degree of Utilization, x	0.144			0.392			0.717			0.101	0.704	
Move-Up Time, m (s)	2.0			2.0			2.0			2.3	2.3	
Service Time, ts (s)	5.10			4.56			3.71			4.40	3.88	

Capacity, Delay and Level of Service

Flow Rate, v (veh/h)	73			215			452			54	410	
Capacity	507			549			631			537	582	
95% Queue Length, Q ₉₅ (veh)	0.5			1.9			6.0			0.3	5.7	
Control Delay (s/veh)	11.3			13.7			21.8			10.2	22.3	
Level of Service, LOS	B			B			C			B	C	
Approach Delay (s/veh)	11.3			13.7			21.8			20.8		
Approach LOS	B			B			C			C		
Intersection Delay, s/veh LOS	19.3						C					

APPENDIX C

HCM AND LEVELS OF SERVICE EXPLANATION HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF BELL

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for traffic signals are stated in terms of the average control delay per vehicle. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service Criteria for Signalized Intersections	
Level of Service	Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

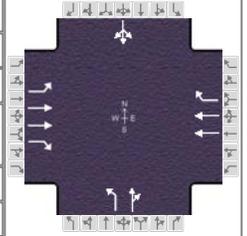
LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB				
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R		
Demand (v), veh/h	55	1033	206				999	117	362	167	4	61	114	44

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	42.2	13.8	20.5	0.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

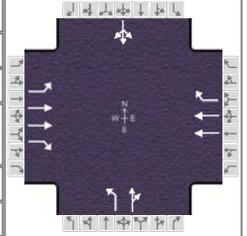
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		46.7		46.7		25.0		18.3
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.3
Queue Clearance Time (g _s), s						21.3		13.5
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	60	1123	224		1086	127	393	186			238	
Adjusted Saturation Flow Rate (s), veh/h/ln	528	1809	1610		1809	1610	1810	1892			1809	
Queue Service Time (g _s), s	8.7	21.5	7.7		20.5	4.1	19.3	7.6			11.5	
Cycle Queue Clearance Time (g _c), s	29.2	21.5	7.7		20.5	4.1	19.3	7.6			11.5	
Green Ratio (g/C)	0.47	0.47	0.47		0.47	0.47	0.23	0.23			0.15	
Capacity (c), veh/h	207	1695	755		1695	755	412	431			278	
Volume-to-Capacity Ratio (X)	0.289	0.662	0.297		0.640	0.169	0.955	0.431			0.857	
Back of Queue (Q), ft/ln (95 th percentile)	57.2	341	128.7		327	67.8	444.6	155.6			239.1	
Back of Queue (Q), veh/ln (95 th percentile)	2.3	13.6	5.1		13.1	2.7	17.8	6.2			9.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	29.3	18.4	14.8		18.2	13.8	34.3	29.8			37.1	
Incremental Delay (d ₂), s/veh	3.5	2.1	1.0		1.9	0.5	32.5	0.3			7.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	32.7	20.5	15.8		20.0	14.3	66.8	30.0			44.8	
Level of Service (LOS)	C	C	B		C	B	E	C			D	
Approach Delay, s/veh / LOS	20.2	C		19.4	B		55.0	D		44.8	D	
Intersection Delay, s/veh / LOS	27.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.65	B	1.49	A	1.44	A	0.88	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	32	1039	338				824	28		221	86	3	47	214	27

Signal Information																				
Cycle, s	90.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On	Green	45.4	17.1	14.0	0.0	0.0	0.0	1			2		3			4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6		7			8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0										

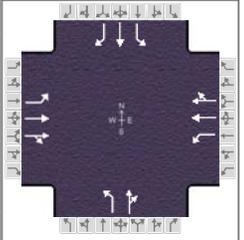
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.9		49.9		18.5		21.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						13.6		16.8
Green Extension Time (g _e), s		0.0		0.0		0.4		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						0.07		0.69

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14	
Adjusted Flow Rate (v), veh/h	35	1129	367		896	30	240	97			313		
Adjusted Saturation Flow Rate (s), veh/h/ln	631	1809	1610		1809	1610	1810	1889			1854		
Queue Service Time (g _s), s	3.5	20.3	13.2		14.7	0.9	11.6	4.1			14.8		
Cycle Queue Clearance Time (g _c), s	18.1	20.3	13.2		14.7	0.9	11.6	4.1			14.8		
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.19		
Capacity (c), veh/h	295	1824	812		1824	812	282	295			352		
Volume-to-Capacity Ratio (X)	0.118	0.619	0.453		0.491	0.037	0.850	0.328			0.890		
Back of Queue (Q), ft/ln (95 th percentile)	25.2	317.3	211.2		242.9	13.8	240.4	85.4			323.2		
Back of Queue (Q), veh/ln (95 th percentile)	1.0	12.7	8.4		9.7	0.6	9.6	3.4			12.9		
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00		
Uniform Delay (d ₁), s/veh	20.7	16.1	14.3		14.7	11.3	37.0	33.8			35.6		
Incremental Delay (d ₂), s/veh	0.8	1.6	1.8		0.9	0.1	7.6	0.2			16.4		
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0		
Control Delay (d), s/veh	21.5	17.7	16.2		15.6	11.4	44.5	34.0			51.9		
Level of Service (LOS)	C	B	B		B	B	D	C			D		
Approach Delay, s/veh / LOS	17.4	B		15.5	B		41.5	D			51.9	D	
Intersection Delay, s/veh / LOS	22.9						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.75	B	1.25	A	1.04	A	1.00	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other		
Jurisdiction	City of Bell	Time Period	Existing - AM	PHF	0.92		
Urban Street	Otis / Florence	Analysis Year	2019	Analysis Period	1 > 7:00		
Intersection	Intersection #7	File Name	07AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	53	1074	94	69	1074	46	130	231	155	78	221	47

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.6	0.5	42.3	29.1	0.0	0.0	1	2	3	4	
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	5	6	7	8	
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0					

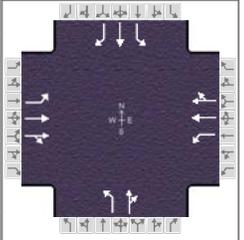
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	9.1	46.8	9.6	47.3		33.6		33.6
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.4		3.4
Queue Clearance Time (g_s), s	4.8		5.7			20.9		28.4
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		1.8		0.7
Phase Call Probability	0.76		0.85			1.00		1.00
Max Out Probability	0.99		1.00			0.14		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	58	643	626	75	613	604	141	420		85	240	51
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1846	1810	1900	1872	1158	1772		982	1900	1610
Queue Service Time (g_s), s	2.8	24.4	24.5	3.7	22.4	22.5	9.7	18.9		7.5	8.8	2.0
Cycle Queue Clearance Time (g_c), s	2.8	24.4	24.5	3.7	22.4	22.5	18.5	18.9		26.4	8.8	2.0
Green Ratio (g/C)	0.05	0.47	0.47	0.06	0.48	0.48	0.32	0.32		0.32	0.32	0.32
Capacity (c), veh/h	92	894	869	102	905	892	341	572		191	614	520
Volume-to-Capacity Ratio (X)	0.626	0.719	0.721	0.734	0.677	0.678	0.415	0.733		0.444	0.392	0.098
Back of Queue (Q), ft/ln (95 th percentile)	58.2	413.3	406.2	76.9	381.6	377.8	122.3	330		82	175	33.5
Back of Queue (Q), veh/ln (95 th percentile)	2.3	16.5	16.2	3.1	15.3	15.1	4.9	13.2		3.3	7.0	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d_1), s/veh	41.9	19.1	19.1	41.8	18.2	18.2	30.8	27.0		38.7	23.6	21.3
Incremental Delay (d_2), s/veh	2.6	5.0	5.1	3.8	4.1	4.1	0.3	3.7		0.6	0.2	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.5	24.0	24.2	45.6	22.3	22.4	31.1	30.8		39.4	23.8	21.3
Level of Service (LOS)	D	C	C	D	C	C	C	C		D	C	C
Approach Delay, s/veh / LOS	25.0		C	23.7		C	30.8		C	27.0		C
Intersection Delay, s/veh / LOS	25.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.09	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.58	B	1.55	B	1.41	A	1.11	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other		
Jurisdiction	City of Bell	Time Period	Existing - PM	PHF	0.92		
Urban Street	Otis / Florence	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Intersection #7	File Name	07PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	43	980	85	86	813	54	76	174	105	64	272	56

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.1	1.9	47.8	22.7	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0					

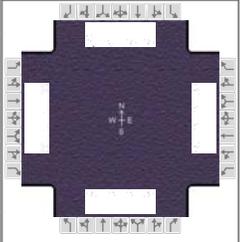
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	8.6	52.3	10.5	54.2		27.2		27.2
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.3		3.3
Queue Clearance Time (g_s), s	4.3		6.6			20.8		21.2
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		1.5		1.5
Phase Call Probability	0.69		0.90			1.00		1.00
Max Out Probability	0.00		0.00			0.09		0.11

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	47	587	571	93	476	466	83	303		70	296	61
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1846	1810	1900	1858	1101	1779		1093	1900	1610
Queue Service Time (g_s), s	2.3	18.9	18.9	4.6	13.5	13.5	6.5	13.8		5.5	12.4	2.6
Cycle Queue Clearance Time (g_c), s	2.3	18.9	18.9	4.6	13.5	13.5	18.8	13.8		19.2	12.4	2.6
Green Ratio (g/C)	0.05	0.53	0.53	0.07	0.55	0.55	0.25	0.25		0.25	0.25	0.25
Capacity (c), veh/h	83	1009	981	121	1049	1025	207	449		189	479	406
Volume-to-Capacity Ratio (X)	0.562	0.581	0.582	0.774	0.454	0.454	0.399	0.676		0.368	0.617	0.150
Back of Queue (Q), ft/ln (95 th percentile)	47	315.6	309.2	95.6	235.8	231.9	79.4	248.8		66.7	237.3	45.3
Back of Queue (Q), veh/ln (95 th percentile)	1.9	12.6	12.4	3.8	9.4	9.3	3.2	10.0		2.7	9.5	1.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d_1), s/veh	42.0	14.3	14.3	41.3	12.1	12.1	38.1	30.3		38.9	29.8	26.2
Incremental Delay (d_2), s/veh	2.2	2.4	2.5	4.0	1.4	1.5	0.5	0.7		0.4	0.5	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.3	16.8	16.8	45.3	13.5	13.5	38.5	31.1		39.4	30.3	26.2
Level of Service (LOS)	D	B	B	D	B	B	D	C		D	C	C
Approach Delay, s/veh / LOS	17.9		B	16.4		B	32.6		C	31.2		C
Intersection Delay, s/veh / LOS	21.1						C					

Multimodal Results	EB	WB	NB	SB
Pedestrian LOS Score / LOS	1.89 / B	2.08 / B	2.29 / B	2.29 / B
Bicycle LOS Score / LOS	1.48 / A	1.34 / A	1.12 / A	1.19 / A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Existing - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	171	814	216	190	924	97	163	779	129	141	621	78

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	11.0	0.6	30.5	5.9	2.6	21.5			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	0.0	3.5	3.5	0.0	3.5			
				Red	1.0	0.0	1.0	1.0	0.0	1.0			

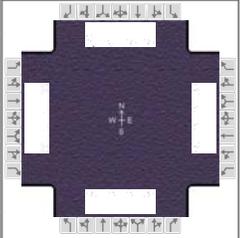
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.5	35.0	16.0	35.6	13.0	28.6	10.4	26.0
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	11.0		12.1		10.5	22.1	5.8	19.6
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.9	0.1	1.9
Phase Call Probability	0.99		0.99		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	0.84	1.00	0.85

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	186	885	235	207	1004	105	177	847	140	153	387	373
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1825
Queue Service Time (g_s), s	9.0	19.3	10.2	10.1	22.7	4.1	8.5	20.1	5.2	3.8	17.5	17.6
Cycle Queue Clearance Time (g_c), s	9.0	19.3	10.2	10.1	22.7	4.1	8.5	20.1	5.2	3.8	17.5	17.6
Green Ratio (g/C)	0.12	0.34	0.34	0.13	0.35	0.35	0.09	0.27	0.40	0.07	0.24	0.24
Capacity (c), veh/h	220	1226	546	232	1249	556	171	969	637	229	453	436
Volume-to-Capacity Ratio (X)	0.844	0.722	0.430	0.891	0.804	0.190	1.037	0.874	0.220	0.669	0.854	0.856
Back of Queue (Q), ft/ln (95 th percentile)	224.1	331.5	182.6	262.4	385.5	72.5	301.5	360.2	83.2	74.9	355	346.5
Back of Queue (Q), veh/ln (95 th percentile)	9.0	13.3	7.3	10.5	15.4	2.9	12.1	14.4	3.3	3.0	14.2	13.9
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	38.7	26.0	23.0	38.6	26.7	20.6	40.8	31.5	18.0	41.1	32.8	32.8
Incremental Delay (d_2), s/veh	21.5	3.7	2.5	31.2	5.6	0.8	78.8	7.3	0.1	1.3	11.7	12.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	60.2	29.7	25.5	69.8	32.3	21.4	119.6	38.8	18.1	42.4	44.5	45.1
Level of Service (LOS)	E	C	C	E	C	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	33.3		C	37.3		D	48.6		D	44.4		D
Intersection Delay, s/veh / LOS	40.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.56	B	1.57	B	1.45	A	1.24	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 25, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Existing - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	114	832	140	170	733	136	147	556	123	198	685	77

Signal Information				Signal Timing Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	7.7	2.9	30.5	7.4	1.1	22.4						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

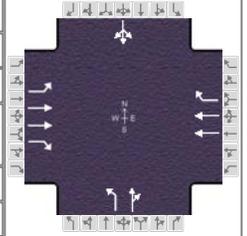
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	12.2	35.0	15.1	37.9	13.0	28.0	11.9	26.9
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	8.0		11.0		9.9	15.3	7.4	21.3
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.1	1.1
Phase Call Probability	0.95		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.26	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	124	904	152	185	797	148	160	604	134	215	421	407
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1832
Queue Service Time (g _s), s	6.0	19.8	6.2	9.0	16.0	5.7	7.9	13.3	5.1	5.4	19.3	19.3
Cycle Queue Clearance Time (g _c), s	6.0	19.8	6.2	9.0	16.0	5.7	7.9	13.3	5.1	5.4	19.3	19.3
Green Ratio (g/C)	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.26	0.38	0.08	0.25	0.25
Capacity (c), veh/h	155	1226	546	214	1343	598	171	943	610	289	472	455
Volume-to-Capacity Ratio (X)	0.798	0.738	0.279	0.865	0.593	0.247	0.935	0.641	0.219	0.744	0.892	0.893
Back of Queue (Q), ft/ln (95 th percentile)	136.4	340.2	109.9	235.2	277	99.4	242.8	240.7	81.9	113.2	402.3	392.9
Back of Queue (Q), veh/ln (95 th percentile)	5.5	13.6	4.4	9.4	11.1	4.0	9.7	9.6	3.3	4.5	16.1	15.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.4	26.2	21.7	39.0	22.8	19.6	40.5	29.5	18.9	40.4	32.7	32.7
Incremental Delay (d ₂), s/veh	9.4	4.0	1.3	27.8	1.9	1.0	49.5	1.0	0.1	6.1	16.9	17.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	49.8	30.2	23.0	66.8	24.8	20.6	90.0	30.5	19.0	46.4	49.6	50.2
Level of Service (LOS)	D	C	C	E	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	31.3		C	31.1		C	39.4		D	49.2		D
Intersection Delay, s/veh / LOS	37.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.46	A	1.42	A	1.23	A	1.35	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB				
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R		
Demand (v), veh/h	55	1084	206				999	117	408	182	4	61	131	44

Signal Information																						
Cycle, s	90.0	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On	Green	41.3	14.7	20.5	0.0	0.0	0.0	1			2			3			4		
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6			7			8		
				Red	1.0	1.0	1.0	0.0	0.0	0.0												

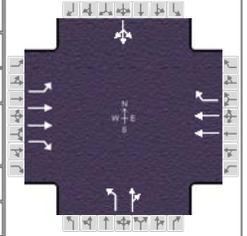
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		45.8		45.8		25.0		19.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						22.5		14.4
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.09

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	60	1178	224		1086	127	443	202			257	
Adjusted Saturation Flow Rate (s), veh/h/ln	528	1809	1610		1809	1610	1810	1893			1816	
Queue Service Time (g _s), s	8.9	23.5	7.9		20.9	4.2	20.5	8.3			12.4	
Cycle Queue Clearance Time (g _c), s	29.8	23.5	7.9		20.9	4.2	20.5	8.3			12.4	
Green Ratio (g/C)	0.46	0.46	0.46		0.46	0.46	0.23	0.23			0.16	
Capacity (c), veh/h	200	1661	739		1661	739	412	431			296	
Volume-to-Capacity Ratio (X)	0.299	0.709	0.303		0.654	0.172	1.076	0.469			0.866	
Back of Queue (Q), ft/ln (95 th percentile)	58.7	370.1	131.5		333.1	69.4	601.5	170.9			260.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.3	14.8	5.3		13.3	2.8	24.1	6.8			10.4	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	30.3	19.5	15.3		18.8	14.3	34.8	30.0			36.7	
Incremental Delay (d ₂), s/veh	3.8	2.6	1.1		2.0	0.5	66.1	0.3			10.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	34.1	22.1	16.3		20.8	14.8	100.9	30.3			46.9	
Level of Service (LOS)	C	C	B		C	B	F	C			D	
Approach Delay, s/veh / LOS	21.7	C		20.2	C		78.8	E		46.9	D	
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.68	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.69	B	1.49	A	1.55	B	0.91	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	32	1052	338				824	28		232	90	3	47	218	27

Signal Information																				
Cycle, s	90.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On	Green	44.6	17.3	14.6	0.0	0.0	0.0	1			2		3			4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6		7			8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0										

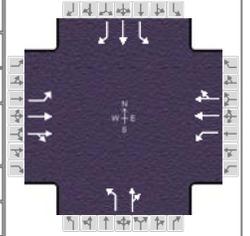
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.1		49.1		19.1		21.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						14.2		17.0
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.11		0.81

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14	
Adjusted Flow Rate (v), veh/h	35	1143	367		896	30	252	101			317		
Adjusted Saturation Flow Rate (s), veh/h/ln	631	1809	1610		1809	1610	1810	1889			1854		
Queue Service Time (g _s), s	3.5	21.0	13.4		14.9	0.9	12.2	4.3			15.0		
Cycle Queue Clearance Time (g _c), s	18.5	21.0	13.4		14.9	0.9	12.2	4.3			15.0		
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.19		
Capacity (c), veh/h	288	1793	798		1793	798	294	307			356		
Volume-to-Capacity Ratio (X)	0.121	0.638	0.460		0.500	0.038	0.857	0.329			0.892		
Back of Queue (Q), ft/ln (95 th percentile)	25.7	328.1	214.8		247	14.1	253.9	88.7			328.3		
Back of Queue (Q), veh/ln (95 th percentile)	1.0	13.1	8.6		9.9	0.6	10.2	3.5			13.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00		
Uniform Delay (d ₁), s/veh	21.4	16.7	14.8		15.2	11.7	36.7	33.3			35.5		
Incremental Delay (d ₂), s/veh	0.9	1.7	1.9		1.0	0.1	9.2	0.2			16.9		
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0		
Control Delay (d), s/veh	22.3	18.5	16.7		16.2	11.8	45.9	33.6			52.3		
Level of Service (LOS)	C	B	B		B	B	D	C			D		
Approach Delay, s/veh / LOS	18.2	B		16.1	B		42.3	D			52.3	D	
Intersection Delay, s/veh / LOS	23.7						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.76	B	1.25	A	1.07	A	1.01	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Florence	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #7	File Name	07AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	53	1074	145	110	1074	46	130	246	192	78	238	47

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	4.6	1.9	39.5	30.5	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	0.0	3.5	3.5	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0					

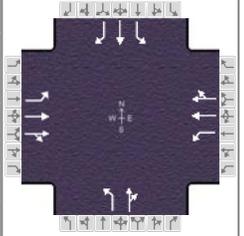
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	9.1	44.0	11.0	45.9		35.0		35.0
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.4		3.4
Queue Clearance Time (g _s), s	4.8		7.9			24.0		32.2
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0		1.7		0.0
Phase Call Probability	0.76		0.95			1.00		1.00
Max Out Probability	1.00		1.00			0.42		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	58	675	650	120	613	604	141	476		85	259	51
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1821	1810	1900	1872	1139	1761		933	1900	1610
Queue Service Time (g _s), s	2.8	27.8	28.1	5.9	23.1	23.2	9.8	22.0		8.2	9.4	1.9
Cycle Queue Clearance Time (g _c), s	2.8	27.8	28.1	5.9	23.1	23.2	19.1	22.0		30.2	9.4	1.9
Green Ratio (g/C)	0.05	0.44	0.44	0.07	0.46	0.46	0.34	0.34		0.34	0.34	0.34
Capacity (c), veh/h	92	834	799	131	874	862	347	597		168	644	546
Volume-to-Capacity Ratio (X)	0.626	0.809	0.814	0.914	0.701	0.702	0.407	0.798		0.506	0.402	0.094
Back of Queue (Q), ft/ln (95 th percentile)	58.2	484.7	473.7	198.6	396.3	392.3	120.8	386.2		85.1	185.2	32.6
Back of Queue (Q), veh/ln (95 th percentile)	2.3	19.4	18.9	7.9	15.9	15.7	4.8	15.4		3.4	7.4	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	41.9	22.0	22.0	41.5	19.4	19.4	30.1	27.0		40.6	22.8	20.3
Incremental Delay (d ₂), s/veh	2.6	8.4	8.9	52.4	4.7	4.7	0.3	6.9		1.0	0.2	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.5	30.3	30.9	93.9	24.0	24.1	30.4	33.9		41.6	22.9	20.3
Level of Service (LOS)	D	C	C	F	C	C	C	C		D	C	C
Approach Delay, s/veh / LOS	31.2		C	30.3		C	33.1		C	26.6		C
Intersection Delay, s/veh / LOS	30.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.09	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.63	B	1.59	B	1.51	B	1.14	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Florence	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #7	File Name	07PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	43	980	98	96	813	54	76	178	114	64	276	56

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2	Green	4.1	2.5	46.4	23.4	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

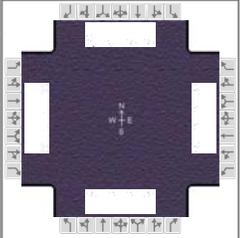
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	8.6	50.9	11.1	53.4		27.9		27.9
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.3		3.3
Queue Clearance Time (g _s), s	4.3		7.1			20.8		22.0
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		1.5		1.5
Phase Call Probability	0.69		0.93			1.00		1.00
Max Out Probability	0.00		0.01			0.10		0.15

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	47	595	577	104	476	466	83	317		70	300	61
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1839	1810	1900	1858	1096	1775		1079	1900	1610
Queue Service Time (g _s), s	2.3	19.9	19.9	5.1	13.7	13.7	6.4	14.5		5.6	12.5	2.6
Cycle Queue Clearance Time (g _c), s	2.3	19.9	19.9	5.1	13.7	13.7	18.8	14.5		20.0	12.5	2.6
Green Ratio (g/C)	0.05	0.52	0.52	0.07	0.54	0.54	0.26	0.26		0.26	0.26	0.26
Capacity (c), veh/h	83	980	949	134	1033	1011	214	462		188	494	419
Volume-to-Capacity Ratio (X)	0.562	0.607	0.608	0.781	0.461	0.461	0.385	0.687		0.370	0.607	0.145
Back of Queue (Q), ft/ln (95 th percentile)	47	333.5	326.4	106.1	240.6	236.7	78.6	259.1		66.6	237.7	44.7
Back of Queue (Q), veh/ln (95 th percentile)	1.9	13.3	13.1	4.2	9.6	9.5	3.1	10.4		2.7	9.5	1.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.0	15.3	15.4	41.0	12.5	12.5	37.5	30.0		38.9	29.3	25.6
Incremental Delay (d ₂), s/veh	2.2	2.8	2.9	3.7	1.5	1.5	0.4	1.1		0.4	0.5	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.3	18.1	18.2	44.7	14.0	14.0	37.9	31.1		39.4	29.7	25.7
Level of Service (LOS)	D	B	B	D	B	B	D	C		D	C	C
Approach Delay, s/veh / LOS	19.2	B		17.0	B		32.5	C		30.7	C	
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB			WB			NB			SB		
Pedestrian LOS Score / LOS	1.89	B		2.08	B		2.29	B		2.29	B	
Bicycle LOS Score / LOS	1.49	A		1.35	A		1.15	A		1.20	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Cudahy	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	171	851	216	190	965	97	163	813	129	141	659	78

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	10.9	30.5	5.9	2.6	22.1	0.0					
	Yellow	3.5	3.5	3.5	0.0	3.5	0.0					
	Red	1.0	1.0	1.0	0.0	1.0	0.0					

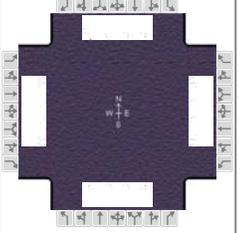
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.4	35.0	15.4	35.0	13.0	29.3	10.4	26.6
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	11.1		12.2		10.5	23.1	5.8	20.6
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.6	0.1	1.6
Phase Call Probability	0.99		0.99		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	186	925	235	207	1049	105	177	884	140	153	408	393
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1829
Queue Service Time (g _s), s	9.1	20.4	10.2	10.2	24.3	4.2	8.5	21.1	5.2	3.8	18.6	18.6
Cycle Queue Clearance Time (g _c), s	9.1	20.4	10.2	10.2	24.3	4.2	8.5	21.1	5.2	3.8	18.6	18.6
Green Ratio (g/C)	0.12	0.34	0.34	0.12	0.34	0.34	0.09	0.28	0.40	0.07	0.25	0.25
Capacity (c), veh/h	218	1226	546	218	1226	546	171	996	637	229	468	450
Volume-to-Capacity Ratio (X)	0.852	0.754	0.430	0.947	0.856	0.193	1.037	0.887	0.220	0.669	0.872	0.873
Back of Queue (Q), ft/ln (95 th percentile)	231.3	350	182.6	288.8	418.1	73.3	301.5	378.6	83.2	74.9	380.5	371.2
Back of Queue (Q), veh/ln (95 th percentile)	9.3	14.0	7.3	11.6	16.7	2.9	12.1	15.1	3.3	3.0	15.2	14.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	38.8	26.4	23.0	39.3	27.7	21.0	40.8	31.3	18.0	41.1	32.6	32.6
Incremental Delay (d ₂), s/veh	25.1	4.3	2.5	45.6	7.8	0.8	78.8	8.6	0.1	1.3	14.2	14.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	63.9	30.8	25.5	84.9	35.5	21.8	119.6	39.9	18.1	42.4	46.8	47.4
Level of Service (LOS)	E	C	C	F	D	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	34.4	C		41.9	D		49.1	D		46.3	D	
Intersection Delay, s/veh / LOS	42.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.60	B	1.61	B	1.48	A	1.27	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 5, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Cudahy	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	114	841	140	170	743	136	147	564	123	198	694	77

Signal Information				Phase Diagrams								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	7.7	2.8	30.5	7.4	1.1	22.5						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

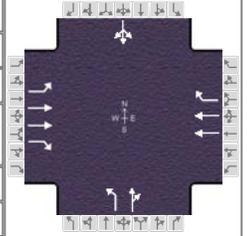
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	12.2	35.0	15.0	37.8	13.0	28.1	11.9	27.0
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	8.0		11.0		9.9	15.5	7.4	21.5
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.1	1.0
Phase Call Probability	0.95		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.28	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	124	914	152	185	808	148	160	613	134	215	426	412
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1833
Queue Service Time (g _s), s	6.0	20.1	6.2	9.0	16.3	5.7	7.9	13.5	5.1	5.4	19.5	19.5
Cycle Queue Clearance Time (g _c), s	6.0	20.1	6.2	9.0	16.3	5.7	7.9	13.5	5.1	5.4	19.5	19.5
Green Ratio (g/C)	0.09	0.34	0.34	0.12	0.37	0.37	0.09	0.26	0.38	0.08	0.25	0.25
Capacity (c), veh/h	155	1226	546	211	1337	595	171	949	610	289	476	459
Volume-to-Capacity Ratio (X)	0.798	0.746	0.279	0.877	0.604	0.248	0.935	0.646	0.219	0.744	0.897	0.897
Back of Queue (Q), ft/ln (95 th percentile)	137.6	345.1	109.9	240	282.2	100	242.8	243.4	81.9	113.2	408.5	399.3
Back of Queue (Q), veh/ln (95 th percentile)	5.5	13.8	4.4	9.6	11.3	4.0	9.7	9.7	3.3	4.5	16.3	16.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	40.4	26.3	21.7	39.1	23.0	19.7	40.5	29.5	18.9	40.4	32.6	32.6
Incremental Delay (d ₂), s/veh	10.0	4.2	1.3	30.5	2.0	1.0	49.5	1.0	0.1	6.1	17.7	18.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	50.4	30.5	23.0	69.6	25.1	20.7	90.0	30.5	19.0	46.4	50.3	50.9
Level of Service (LOS)	D	C	C	E	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	31.6	C		31.7	C		39.3	D		49.7	D	
Intersection Delay, s/veh / LOS	37.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.47	A	1.43	A	1.24	A	1.36	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	56	1072	210		1042	122	369	170	4	64	116	45

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	41.9	14.1	20.5	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

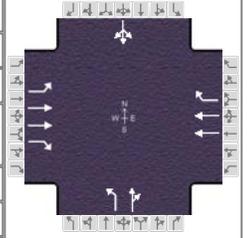
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		46.4		46.4		25.0		18.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.3
Queue Clearance Time (g _s), s						21.8		13.9
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1165	228		1133	133	401	189			245	
Adjusted Saturation Flow Rate (s), veh/h/ln	505	1809	1610		1809	1610	1810	1892			1809	
Queue Service Time (g _s), s	9.6	22.9	8.0		21.9	4.3	19.8	7.7			11.9	
Cycle Queue Clearance Time (g _c), s	31.6	22.9	8.0		21.9	4.3	19.8	7.7			11.9	
Green Ratio (g/C)	0.47	0.47	0.47		0.47	0.47	0.23	0.23			0.16	
Capacity (c), veh/h	192	1683	749		1683	749	412	431			284	
Volume-to-Capacity Ratio (X)	0.317	0.692	0.305		0.673	0.177	0.973	0.439			0.860	
Back of Queue (Q), ft/ln (95 th percentile)	61.2	359.9	132.8		347.1	71.6	466.8	158.6			246.7	
Back of Queue (Q), veh/ln (95 th percentile)	2.4	14.4	5.3		13.9	2.9	18.7	6.3			9.9	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	31.0	19.0	15.0		18.7	14.0	34.5	29.8			37.0	
Incremental Delay (d ₂), s/veh	4.3	2.4	1.1		2.2	0.5	37.0	0.3			8.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	35.3	21.4	16.1		20.9	14.5	71.5	30.1			45.6	
Level of Service (LOS)	D	C	B		C	B	E	C			D	
Approach Delay, s/veh / LOS	21.1	C		20.2	C		58.2	E		45.6	D	
Intersection Delay, s/veh / LOS	28.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.69	B	1.53	B	1.46	A	0.89	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	33	1091	345				871	32		225	88	3	52	218	28

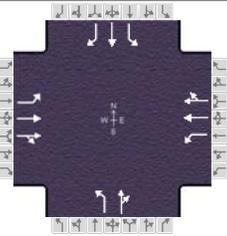
Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	44.7	17.6	14.3	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.2		49.2		18.8		22.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						13.8		17.3
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.08		1.00

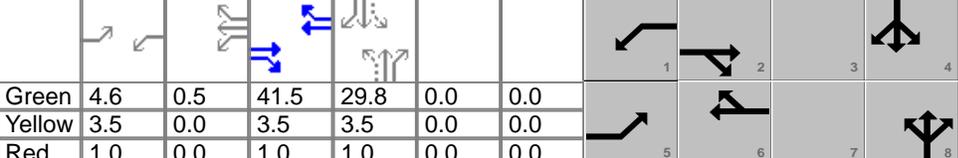
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1186	375		947	35	245	99			324	
Adjusted Saturation Flow Rate (s), veh/h/ln	602	1809	1610		1809	1610	1810	1889			1853	
Queue Service Time (g _s), s	3.9	22.1	13.8		16.1	1.0	11.8	4.2			15.3	
Cycle Queue Clearance Time (g _c), s	20.0	22.1	13.8		16.1	1.0	11.8	4.2			15.3	
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.20	
Capacity (c), veh/h	271	1795	799		1795	799	287	299			362	
Volume-to-Capacity Ratio (X)	0.132	0.661	0.469		0.527	0.044	0.853	0.330			0.895	
Back of Queue (Q), ft/ln (95 th percentile)	27.4	343.1	219.2		262.6	16.2	245.3	87.2			336.3	
Back of Queue (Q), veh/ln (95 th percentile)	1.1	13.7	8.8		10.5	0.6	9.8	3.5			13.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	22.3	17.0	14.9		15.5	11.7	36.8	33.6			35.3	
Incremental Delay (d ₂), s/veh	1.0	1.9	2.0		1.1	0.1	8.2	0.2			17.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	23.3	18.9	16.9		16.6	11.8	45.0	33.9			53.0	
Level of Service (LOS)	C	B	B		B	B	D	C			D	
Approach Delay, s/veh / LOS	18.5	B		16.4	B		41.8	D		53.0	D	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.80	B	1.30	A	1.05	A	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Bell	Time Period	Future - AM	PHF	0.92	
Urban Street	Otis / Florence	Analysis Year	2021	Analysis Period	1 > 7:00	
Intersection	Intersection #7	File Name	07AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	54	1113	101	72	1114	47	139	241	160	80	230	48

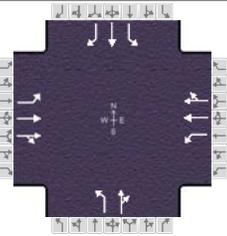
Signal Information																								
Cycle, s	90.0	Reference Phase	2	Green	4.6	0.5	41.5	29.8	0.0	0.0	Yellow	3.5	0.0	3.5	3.5	0.0	0.0	Red	1.0	0.0	1.0	1.0	0.0	0.0
Offset, s	0	Reference Point	End																					
Uncoordinated	No	Simult. Gap E/W	On																					
Force Mode	Fixed	Simult. Gap N/S	On																					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	9.1	46.0	9.7	46.5		34.3		34.3
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.4		3.4
Queue Clearance Time (g_s), s	4.9		5.8			21.6		29.5
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0		1.9		0.4
Phase Call Probability	0.77		0.86			1.00		1.00
Max Out Probability	1.00		1.00			0.20		1.00

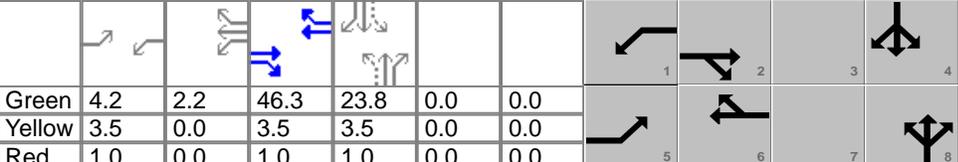
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	59	668	651	78	635	627	151	436		87	250	52
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1844	1810	1900	1873	1148	1773		968	1900	1610
Queue Service Time (g_s), s	2.9	26.3	26.5	3.8	24.1	24.1	10.5	19.6		7.9	9.1	2.0
Cycle Queue Clearance Time (g_c), s	2.9	26.3	26.5	3.8	24.1	24.1	19.6	19.6		27.5	9.1	2.0
Green Ratio (g/C)	0.05	0.46	0.46	0.06	0.47	0.47	0.33	0.33		0.33	0.33	0.33
Capacity (c), veh/h	93	876	851	104	888	875	344	588		190	630	534
Volume-to-Capacity Ratio (X)	0.632	0.763	0.765	0.756	0.715	0.716	0.439	0.742		0.458	0.397	0.098
Back of Queue (Q), ft/ln (95 th percentile)	59.3	448	440.7	85.6	409.4	406.1	131.2	341.6		84.3	180.3	33.7
Back of Queue (Q), veh/ln (95 th percentile)	2.4	17.9	17.6	3.4	16.4	16.2	5.2	13.7		3.4	7.2	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d_1), s/veh	41.9	20.1	20.2	41.8	19.2	19.2	30.7	26.7		38.8	23.2	20.8
Incremental Delay (d_2), s/veh	2.6	6.2	6.5	7.9	4.9	5.0	0.3	4.2		0.6	0.2	0.0
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.5	26.4	26.7	49.7	24.1	24.2	31.0	30.9		39.5	23.3	20.8
Level of Service (LOS)	D	C	C	D	C	C	C	C		D	C	C
Approach Delay, s/veh / LOS	27.3		C	25.6		C	30.9		C	26.6		C
Intersection Delay, s/veh / LOS	27.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.09	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.62	B	1.59	B	1.46	A	1.13	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Bell	Time Period	Future - PM	PHF	0.92	
Urban Street	Otis / Florence	Analysis Year	2021	Analysis Period	1 > 17:00	
Intersection	Intersection #7	File Name	07PM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	44	1026	98	92	850	55	87	185	111	65	285	57

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	4.2	2.2	46.3	23.8	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

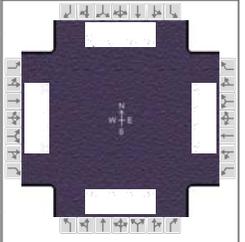
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	8.7	50.8	10.9	53.0		28.3		28.3
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.3		3.3
Queue Clearance Time (g_s), s	4.3		6.9			22.3		22.2
Green Extension Time (g_e), s	0.0	0.0	0.1	0.0		1.5		1.5
Phase Call Probability	0.70		0.92			1.00		1.00
Max Out Probability	0.00		0.02			0.18		0.18

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	48	620	602	100	497	486	95	322		71	310	62
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1841	1810	1900	1859	1087	1780		1075	1900	1610
Queue Service Time (g_s), s	2.3	21.2	21.2	4.9	14.7	14.7	7.5	14.6		5.7	12.9	2.6
Cycle Queue Clearance Time (g_c), s	2.3	21.2	21.2	4.9	14.7	14.7	20.3	14.6		20.2	12.9	2.6
Green Ratio (g/C)	0.05	0.51	0.51	0.07	0.54	0.54	0.26	0.26		0.26	0.26	0.26
Capacity (c), veh/h	84	977	947	128	1023	1001	213	471		191	503	426
Volume-to-Capacity Ratio (X)	0.568	0.634	0.636	0.779	0.486	0.486	0.444	0.682		0.369	0.616	0.145
Back of Queue (Q), ft/ln (95 th percentile)	48.2	353.3	346.3	102	255.3	251.2	91.3	261		67.5	243.6	45.1
Back of Queue (Q), veh/ln (95 th percentile)	1.9	14.1	13.9	4.1	10.2	10.0	3.7	10.4		2.7	9.7	1.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d_1), s/veh	42.0	15.8	15.8	41.1	13.0	13.0	38.0	29.7		38.7	29.1	25.3
Incremental Delay (d_2), s/veh	2.2	3.1	3.3	3.8	1.7	1.7	0.5	1.2		0.4	0.5	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.3	18.9	19.0	44.9	14.6	14.7	38.5	30.8		39.2	29.5	25.4
Level of Service (LOS)	D	B	B	D	B	B	D	C		D	C	C
Approach Delay, s/veh / LOS	19.9		B	17.4		B	32.6		C	30.5		C
Intersection Delay, s/veh / LOS	22.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	2.08	B	2.29	B	2.29	B
Bicycle LOS Score / LOS	1.53	B	1.38	A	1.17	A	1.22	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Future - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	184	834	225	195	951	104	170	813	133	148	643	89

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		10.8	30.5	6.0	2.5	22.2	0.0				
		Yellow		3.5	3.5	3.5	0.0	3.5	0.0				
		Red		1.0	1.0	1.0	0.0	1.0	0.0				

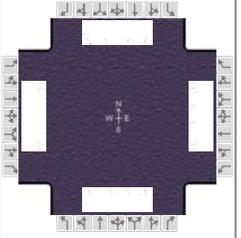
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	15.3	35.0	15.3	35.0	13.0	29.2	10.5	26.7
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	11.8		12.5		10.5	23.1	6.0	20.5
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	1.6	0.1	1.6
Phase Call Probability	0.99		1.00		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	200	907	245	212	1034	113	185	884	145	161	406	389
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1819
Queue Service Time (g_s), s	9.8	19.9	10.7	10.5	23.8	4.5	8.5	21.1	5.4	4.0	18.4	18.5
Cycle Queue Clearance Time (g_c), s	9.8	19.9	10.7	10.5	23.8	4.5	8.5	21.1	5.4	4.0	18.4	18.5
Green Ratio (g/C)	0.12	0.34	0.34	0.12	0.34	0.34	0.09	0.27	0.39	0.07	0.25	0.25
Capacity (c), veh/h	218	1226	546	218	1226	546	171	992	635	234	468	448
Volume-to-Capacity Ratio (X)	0.918	0.739	0.448	0.973	0.843	0.207	1.081	0.891	0.228	0.687	0.868	0.869
Back of Queue (Q), ft/ln (95 th percentile)	269.6	341.8	191.4	307.5	409.1	79.2	327.2	380.8	86.2	78.7	377	366.6
Back of Queue (Q), veh/ln (95 th percentile)	10.8	13.7	7.7	12.3	16.4	3.2	13.1	15.2	3.4	3.1	15.1	14.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.1	26.2	23.2	39.4	27.5	21.2	40.8	31.4	18.1	41.1	32.5	32.5
Incremental Delay (d_2), s/veh	38.6	4.0	2.7	53.0	7.2	0.9	92.2	9.0	0.1	1.3	13.7	14.4
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	77.7	30.3	25.8	92.4	34.7	22.0	132.9	40.4	18.2	42.4	46.2	46.9
Level of Service (LOS)	E	C	C	F	C	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	36.5		D	42.7		D	51.8		D	45.8		D
Intersection Delay, s/veh / LOS	43.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.60	B	1.61	B	1.49	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell/City of Cudahy	Time Period	Future - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	132	860	147	175	757	146	152	590	127	208	718	92

Signal Information				Signal Timing Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	8.8	1.1	30.5	7.7	0.8	23.2						
Yellow	3.5	0.0	3.5	3.5	0.0	3.5						
Red	1.0	0.0	1.0	1.0	0.0	1.0						

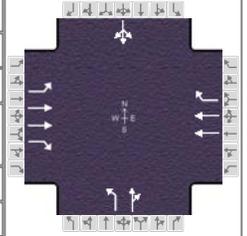
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	13.3	35.0	14.3	36.1	13.0	28.5	12.2	27.7
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g_s), s	9.0		11.4		10.2	16.2	7.7	22.7
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.5
Phase Call Probability	0.97		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.36	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	143	935	160	190	823	159	165	641	138	226	449	431
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1824
Queue Service Time (g_s), s	7.0	20.7	6.6	9.4	17.2	6.4	8.2	14.2	5.3	5.7	20.7	20.7
Cycle Queue Clearance Time (g_c), s	7.0	20.7	6.6	9.4	17.2	6.4	8.2	14.2	5.3	5.7	20.7	20.7
Green Ratio (g/C)	0.10	0.34	0.34	0.11	0.35	0.35	0.09	0.27	0.38	0.09	0.26	0.26
Capacity (c), veh/h	176	1226	546	198	1269	565	171	964	605	300	489	469
Volume-to-Capacity Ratio (X)	0.814	0.762	0.293	0.961	0.648	0.281	0.967	0.665	0.228	0.754	0.919	0.919
Back of Queue (Q), ft/ln (95 th percentile)	176.5	355.1	116.1	281.9	298.1	112.5	261.3	254.5	85.3	120.8	442.9	431
Back of Queue (Q), veh/ln (95 th percentile)	7.1	14.2	4.6	11.3	11.9	4.5	10.5	10.2	3.4	4.8	17.7	17.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	39.8	26.5	21.8	39.9	24.5	21.0	40.6	29.4	19.2	40.2	32.5	32.5
Incremental Delay (d_2), s/veh	18.2	4.5	1.4	52.3	2.6	1.2	58.5	1.4	0.1	7.1	21.6	22.3
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	58.0	31.0	23.2	92.2	27.1	22.3	99.1	30.8	19.3	47.4	54.1	54.8
Level of Service (LOS)	E	C	C	F	C	C	F	C	B	D	D	D
Approach Delay, s/veh / LOS	33.2		C	37.0		D	41.1		D	53.0		D
Intersection Delay, s/veh / LOS	40.8						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.51	B	1.45	A	1.27	A	1.40	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	56	1123	210				1042	122		415	185	4	64	133	45

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	41.0	15.0	20.5	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

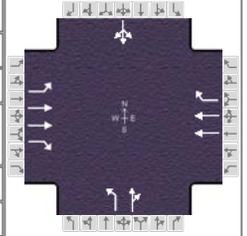
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		45.5		45.5		25.0		19.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						22.5		14.7
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1221	228		1133	133	451	205			263	
Adjusted Saturation Flow Rate (s), veh/h/ln	505	1809	1610		1809	1610	1810	1893			1815	
Queue Service Time (g _s), s	9.8	24.9	8.1		22.3	4.4	20.5	8.5			12.7	
Cycle Queue Clearance Time (g _c), s	32.1	24.9	8.1		22.3	4.4	20.5	8.5			12.7	
Green Ratio (g/C)	0.46	0.46	0.46		0.46	0.46	0.23	0.23			0.17	
Capacity (c), veh/h	185	1648	734		1648	734	412	431			302	
Volume-to-Capacity Ratio (X)	0.329	0.741	0.311		0.687	0.181	1.094	0.476			0.870	
Back of Queue (Q), ft/ln (95 th percentile)	62.9	390.9	135.7		354.1	73.1	629	173.9			267.9	
Back of Queue (Q), veh/ln (95 th percentile)	2.5	15.6	5.4		14.2	2.9	25.2	7.0			10.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	32.1	20.1	15.5		19.4	14.5	34.8	30.1			36.6	
Incremental Delay (d ₂), s/veh	4.7	3.0	1.1		2.4	0.5	72.3	0.3			11.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	36.9	23.2	16.6		21.8	15.1	107.0	30.4			47.6	
Level of Service (LOS)	D	C	B		C	B	F	C			D	
Approach Delay, s/veh / LOS	22.7	C		21.1	C		83.0	F		47.6	D	
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.68	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.73	B	1.53	B	1.57	B	0.92	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
	L	T	R	L	T	R	L	T	R	L	T	R			
Approach Movement															
Demand (v), veh/h	33	1104	345				871	32		236	92	3	52	222	28

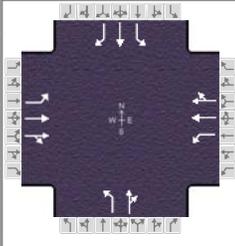
Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On	Green	43.9	17.8	14.8	0.0	0.0	0.0					
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
				Red	1.0	1.0	1.0	0.0	0.0	0.0					

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		48.4		48.4		19.3		22.3
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						14.4		17.5
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.13		1.00

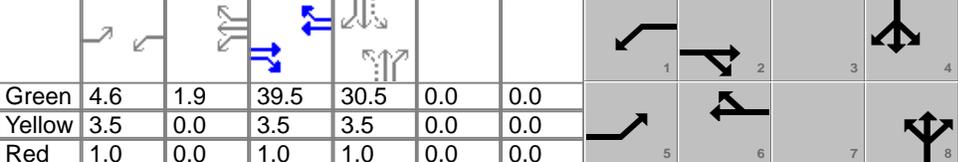
Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1200	375		947	35	257	103			328	
Adjusted Saturation Flow Rate (s), veh/h/ln	602	1809	1610		1809	1610	1810	1889			1853	
Queue Service Time (g _s), s	4.0	22.9	14.0		16.3	1.0	12.4	4.3			15.5	
Cycle Queue Clearance Time (g _c), s	20.3	22.9	14.0		16.3	1.0	12.4	4.3			15.5	
Green Ratio (g/C)	0.49	0.49	0.49		0.49	0.49	0.16	0.16			0.20	
Capacity (c), veh/h	264	1764	785		1764	785	298	312			366	
Volume-to-Capacity Ratio (X)	0.136	0.680	0.478		0.537	0.044	0.860	0.331			0.897	
Back of Queue (Q), ft/ln (95 th percentile)	28	355.7	223.6		267.7	16.6	258.9	90.3			341.2	
Back of Queue (Q), veh/ln (95 th percentile)	1.1	14.2	8.9		10.7	0.7	10.4	3.6			13.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	23.1	17.7	15.4		16.0	12.1	36.6	33.2			35.2	
Incremental Delay (d ₂), s/veh	1.1	2.1	2.1		1.2	0.1	9.8	0.2			18.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	24.1	19.8	17.5		17.2	12.2	46.3	33.4			53.4	
Level of Service (LOS)	C	B	B		B	B	D	C			D	
Approach Delay, s/veh / LOS	19.4	B		17.0	B		42.6	D		53.4	D	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45
Bicycle LOS Score / LOS	1.82	B	1.30	A	1.08	A	1.03	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Bell	Time Period	Future with Project - AM	PHF	0.92	
Urban Street	Otis / Florence	Analysis Year	2021	Analysis Period	1 > 7:00	
Intersection	Intersection #7	File Name	07AM - Future with Project.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	54	1113	152	113	1114	47	139	256	197	80	247	48

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	4.6	1.9	39.5	30.5	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

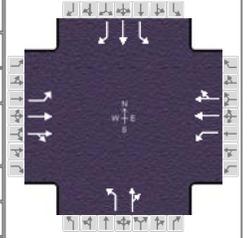
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	9.1	44.0	11.0	45.9		35.0		35.0
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.4		3.4
Queue Clearance Time (g _s), s	4.9		8.1			25.1		32.5
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0		1.6		0.0
Phase Call Probability	0.77		0.95			1.00		1.00
Max Out Probability	1.00		1.00			0.58		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	59	700	675	123	635	627	151	492		87	268	52
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1820	1810	1900	1873	1128	1762		919	1900	1610
Queue Service Time (g _s), s	2.9	29.4	29.8	6.1	24.4	24.5	10.7	23.1		7.4	9.8	2.0
Cycle Queue Clearance Time (g _c), s	2.9	29.4	29.8	6.1	24.4	24.5	20.5	23.1		30.5	9.8	2.0
Green Ratio (g/C)	0.05	0.44	0.44	0.07	0.46	0.46	0.34	0.34		0.34	0.34	0.34
Capacity (c), veh/h	93	834	799	131	874	861	340	597		156	644	546
Volume-to-Capacity Ratio (X)	0.632	0.839	0.845	0.940	0.727	0.728	0.445	0.825		0.558	0.417	0.096
Back of Queue (Q), ft/ln (95 th percentile)	59.3	515.8	506.8	210.1	417.5	413.6	131.6	408.3		91.7	192.3	33.3
Back of Queue (Q), veh/ln (95 th percentile)	2.4	20.6	20.3	8.4	16.7	16.5	5.3	16.3		3.7	7.7	1.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	41.9	22.4	22.5	41.6	19.7	19.7	30.8	27.3		41.8	22.9	20.3
Incremental Delay (d ₂), s/veh	2.6	9.9	10.7	59.6	5.3	5.4	0.3	8.6		2.7	0.2	0.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.5	32.3	33.2	101.2	25.0	25.1	31.1	35.9		44.5	23.1	20.4
Level of Service (LOS)	D	C	C	F	C	C	C	D		D	C	C
Approach Delay, s/veh / LOS	33.2	C		31.8	C		34.8	C		27.3	C	
Intersection Delay, s/veh / LOS	32.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	2.09	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.67	B	1.63	B	1.55	B	1.16	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Florence	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersection #7	File Name	07PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	44	1026	111	102	850	55	87	189	120	65	289	57

Signal Information				Signal Phases									
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	4.2	2.8	45.0	24.4	0.0	0.0					
		Yellow	3.5	0.0	3.5	3.5	0.0	0.0					
		Red	1.0	0.0	1.0	1.0	0.0	0.0					

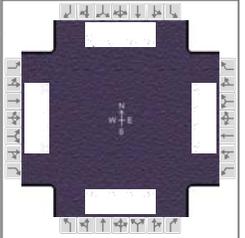
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	2.0	4.0	2.0	4.0		6.0		5.0
Phase Duration, s	8.7	49.5	11.5	52.4		28.9		28.9
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5		4.5		4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0		3.4		3.4
Queue Clearance Time (g _s), s	4.3		7.4			22.4		23.0
Green Extension Time (g _e), s	0.0	0.0	0.1	0.0		1.5		1.5
Phase Call Probability	0.70		0.94			1.00		1.00
Max Out Probability	0.00		0.07			0.20		0.24

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	48	628	608	111	497	486	95	336		71	314	62
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1834	1810	1900	1859	1082	1776		1061	1900	1610
Queue Service Time (g _s), s	2.3	22.2	22.3	5.4	14.9	14.9	7.5	15.3		5.8	13.0	2.6
Cycle Queue Clearance Time (g _c), s	2.3	22.2	22.3	5.4	14.9	14.9	20.4	15.3		21.0	13.0	2.6
Green Ratio (g/C)	0.05	0.50	0.50	0.08	0.53	0.53	0.27	0.27		0.27	0.27	0.27
Capacity (c), veh/h	84	951	918	141	1011	989	219	482		189	516	437
Volume-to-Capacity Ratio (X)	0.568	0.660	0.662	0.786	0.492	0.492	0.432	0.697		0.374	0.609	0.142
Back of Queue (Q), ft/ln (95 th percentile)	48.2	371.5	363.3	112.3	259.3	255.2	90.5	272		67.7	244.7	44.7
Back of Queue (Q), veh/ln (95 th percentile)	1.9	14.9	14.5	4.5	10.4	10.2	3.6	10.9		2.7	9.8	1.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.0	16.8	16.8	40.8	13.3	13.3	37.5	29.5		38.8	28.6	24.8
Incremental Delay (d ₂), s/veh	2.2	3.6	3.7	3.6	1.7	1.7	0.5	1.6		0.5	0.4	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Control Delay (d), s/veh	44.3	20.4	20.5	44.4	15.1	15.1	38.0	31.0		39.3	29.0	24.9
Level of Service (LOS)	D	C	C	D	B	B	D	C		D	C	C
Approach Delay, s/veh / LOS	21.3	C		18.0	B		32.6	C		30.1	C	
Intersection Delay, s/veh / LOS	22.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	2.08	B	2.28	B	2.28	B
Bicycle LOS Score / LOS	1.55	B	1.39	A	1.20	A	1.22	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Cudahy	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #13	File Name	13AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	184	871	225	195	992	104	170	847	133	148	681	89

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	10.3	30.5	6.0	2.5	22.7	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	3.5	0.0				
				Red	1.0	1.0	1.0	0.0	1.0	0.0				

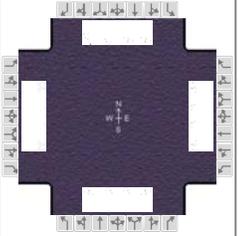
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	14.8	35.0	14.8	35.0	13.0	29.7	10.5	27.2
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	11.9		12.3		10.5	24.1	6.0	21.5
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.1	0.1	1.2
Phase Call Probability	0.99		1.00		0.99	1.00	0.98	1.00
Max Out Probability	1.00		1.00		1.00	1.00	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	200	947	245	212	1078	113	185	921	145	161	427	410
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1823
Queue Service Time (g _s), s	9.9	21.1	10.7	10.3	25.3	4.5	8.5	22.1	5.4	4.0	19.5	19.5
Cycle Queue Clearance Time (g _c), s	9.9	21.1	10.7	10.3	25.3	4.5	8.5	22.1	5.4	4.0	19.5	19.5
Green Ratio (g/C)	0.11	0.34	0.34	0.11	0.34	0.34	0.09	0.28	0.39	0.07	0.25	0.25
Capacity (c), veh/h	206	1226	546	206	1226	546	171	1014	635	234	480	460
Volume-to-Capacity Ratio (X)	0.969	0.772	0.448	1.027	0.880	0.207	1.081	0.908	0.228	0.687	0.890	0.890
Back of Queue (Q), ft/ln (95 th percentile)	294.5	361.4	191.4	333.8	438.3	79.2	327.2	401.7	86.2	78.7	405.3	394.3
Back of Queue (Q), veh/ln (95 th percentile)	11.8	14.5	7.7	13.4	17.5	3.2	13.1	16.1	3.4	3.1	16.2	15.8
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.7	26.6	23.2	39.9	28.0	21.2	40.8	31.3	18.1	41.1	32.4	32.4
Incremental Delay (d ₂), s/veh	53.3	4.8	2.7	69.8	9.2	0.9	92.2	10.8	0.1	1.3	16.8	17.5
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	93.0	31.4	25.8	109.7	37.2	22.0	132.9	42.1	18.2	42.4	49.2	49.9
Level of Service (LOS)	F	C	C	F	D	C	F	D	B	D	D	D
Approach Delay, s/veh / LOS	39.3		D	46.9		D	52.7		D	48.4		D
Intersection Delay, s/veh / LOS	46.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.64	B	1.65	B	1.52	B	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Cudahy	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Atlantic / Florence	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #13	File Name	13PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	132	869	147	175	767	146	152	598	127	208	727	92

Signal Information				Signal Timing (s)										
Cycle, s	90.0	Reference Phase	2	Green	8.8	1.0	30.5	7.7	0.8	23.3	5	6	7	8
Offset, s	0	Reference Point	End	Yellow	3.5	0.0	3.5	3.5	0.0	3.5				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	0.0	1.0	1.0	0.0	1.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	3.0	2.0	3.0	2.0	4.0
Phase Duration, s	13.3	35.0	14.2	36.0	13.0	28.6	12.2	27.8
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.1	3.1	3.1
Queue Clearance Time (g _s), s	9.0		11.4		10.2	16.4	7.7	23.0
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.3
Phase Call Probability	0.97		0.99		0.98	1.00	1.00	1.00
Max Out Probability	1.00		1.00		1.00	0.39	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	143	945	160	190	834	159	165	650	138	226	454	436
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1809	1610	1810	1809	1610	1810	1809	1610	1757	1900	1825
Queue Service Time (g _s), s	7.0	21.0	6.6	9.4	17.5	6.4	8.2	14.4	5.3	5.7	21.0	21.0
Cycle Queue Clearance Time (g _c), s	7.0	21.0	6.6	9.4	17.5	6.4	8.2	14.4	5.3	5.7	21.0	21.0
Green Ratio (g/C)	0.10	0.34	0.34	0.11	0.35	0.35	0.09	0.27	0.38	0.09	0.26	0.26
Capacity (c), veh/h	176	1226	546	195	1265	563	171	969	605	300	491	472
Volume-to-Capacity Ratio (X)	0.814	0.770	0.293	0.973	0.659	0.282	0.967	0.671	0.228	0.754	0.924	0.924
Back of Queue (Q), ft/ln (95 th percentile)	177.6	360.6	116.3	287.6	302.9	112.7	261.3	257.9	85.3	120.8	451.1	439
Back of Queue (Q), veh/ln (95 th percentile)	7.1	14.4	4.7	11.5	12.1	4.5	10.5	10.3	3.4	4.8	18.0	17.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	39.8	26.6	21.8	40.0	24.7	21.1	40.6	29.4	19.2	40.2	32.5	32.5
Incremental Delay (d ₂), s/veh	18.7	4.7	1.4	56.1	2.7	1.3	58.5	1.4	0.1	7.1	22.6	23.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	58.5	31.3	23.2	96.1	27.4	22.4	99.1	30.9	19.3	47.4	55.1	55.8
Level of Service (LOS)	E	C	C	F	C	C	F	C	B	D	E	E
Approach Delay, s/veh / LOS	33.4		C	37.8		D	41.0		D	53.8		D
Intersection Delay, s/veh / LOS	41.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.43	B	2.43	B	2.44	B	2.44	B
Bicycle LOS Score / LOS	1.52	B	1.46	A	1.27	A	1.41	A

APPENDIX D

HCM AND LEVELS OF SERVICE EXPLANATION HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF HUNTINGTON PARK

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for traffic signals are stated in terms of the average control delay per vehicle. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service Criteria for Signalized Intersections	
Level of Service	Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

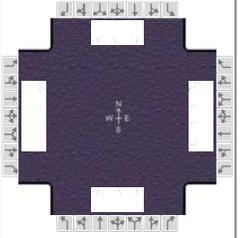
LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing - AM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #1	File Name	01AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	29	956	82	160	1076	155	169	460	281	103	226	73

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End	Green	3.3	1.7	30.2	7.0	1.5	23.8				
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	3.5	3.5	0.0	3.5				
Force Mode	Float	Simult. Gap N/S	On	Red	1.0	1.0	1.0	1.0	0.0	1.0				

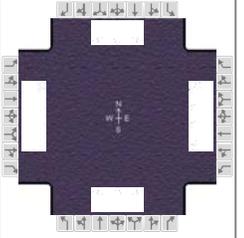
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.8	34.7	14.0	40.9	13.0	29.8	11.5	28.3
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g_s), s	3.5		10.6		10.5	25.1	7.5	11.8
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.2	0.0	2.2
Phase Call Probability	0.55		0.99		0.99	1.00	0.94	1.00
Max Out Probability	0.00		1.00		1.00	1.00	1.00	0.05

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	32	762	366	174	912	426	184	500	305	112	246	79
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1820	1810	1900	1774	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	1.5	15.0	15.0	8.6	16.9	16.9	8.5	23.1	15.2	5.5	9.8	3.4
Cycle Queue Clearance Time (g_c), s	1.5	15.0	15.0	8.6	16.9	16.9	8.5	23.1	15.2	5.5	9.8	3.4
Green Ratio (g/C)	0.04	0.34	0.34	0.42	0.40	0.40	0.09	0.28	0.28	0.08	0.26	0.26
Capacity (c), veh/h	66	1275	611	191	1538	718	171	534	452	141	503	426
Volume-to-Capacity Ratio (X)	0.479	0.598	0.599	0.911	0.593	0.593	1.075	0.937	0.675	0.792	0.489	0.186
Back of Queue (Q), ft/ln (95 th percentile)	31.9	277.4	280.9	244.7	297.1	293.5	323.4	491.7	250.5	136.3	198.6	59.3
Back of Queue (Q), veh/ln (95 th percentile)	1.3	11.1	11.2	9.8	11.9	11.7	12.9	19.7	10.0	5.5	7.9	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	42.5	24.9	24.9	39.8	21.0	21.0	40.8	31.6	28.7	40.8	28.0	25.6
Incremental Delay (d_2), s/veh	2.0	2.1	4.3	40.1	1.7	3.6	90.2	23.7	3.2	15.2	0.3	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.5	26.9	29.2	80.0	22.7	24.6	130.9	55.3	31.9	56.0	28.2	25.7
Level of Service (LOS)	D	C	C	E	C	C	F	E	C	E	C	C
Approach Delay, s/veh / LOS	28.1		C	29.8		C	62.1		E	34.9		C
Intersection Delay, s/veh / LOS	37.7						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.13	A	1.32	A	2.12	B	1.21	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other		
Jurisdiction	City of Huntington Park	Time Period	Existing - PM	PHF	0.92		
Urban Street	Salt Lake - California / F...	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Intersection #1	File Name	01PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	38	1069	156	177	821	87	133	254	220	123	406	73

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.9	1.1	30.8	8.2	0.3	23.2			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	3.5	0.0	3.5			
				Red	1.0	1.0	1.0	1.0	0.0	1.0			

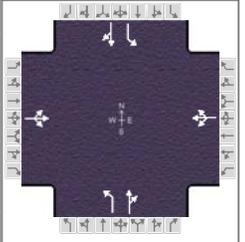
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.4	35.3	14.0	40.9	13.0	28.0	12.7	27.7
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g _s), s	4.0		11.5		9.1	13.6	8.5	22.2
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.0
Phase Call Probability	0.64		0.99		0.97	1.00	0.96	1.00
Max Out Probability	0.02		1.00		1.00	0.06	1.00	0.97

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	41	908	424	192	668	319	145	276	239	134	441	79
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1772	1810	1900	1804	1810	1900	1610	1810	1900	1610
Queue Service Time (g _s), s	2.0	18.6	18.6	9.5	11.4	11.5	7.1	11.3	11.6	6.5	20.2	3.5
Cycle Queue Clearance Time (g _c), s	2.0	18.6	18.6	9.5	11.4	11.5	7.1	11.3	11.6	6.5	20.2	3.5
Green Ratio (g/C)	0.04	0.34	0.34	0.11	0.40	0.40	0.09	0.26	0.26	0.09	0.26	0.26
Capacity (c), veh/h	78	1301	607	191	1539	730	171	495	420	165	490	415
Volume-to-Capacity Ratio (X)	0.532	0.698	0.698	1.007	0.434	0.436	0.846	0.557	0.570	0.809	0.901	0.191
Back of Queue (Q), ft/ln (95 th percentile)	41.6	332.3	332.6	305.9	215.3	214.8	197.8	217.9	195.8	175.6	422.7	60
Back of Queue (Q), veh/ln (95 th percentile)	1.7	13.3	13.3	12.2	8.6	8.6	7.9	8.7	7.8	7.0	16.9	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.2	25.6	25.6	40.3	19.3	19.4	40.1	28.8	28.9	40.1	32.3	26.1
Incremental Delay (d ₂), s/veh	2.1	3.1	6.5	67.0	0.9	1.9	29.2	0.5	0.7	22.0	16.4	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.3	28.7	32.1	107.3	20.2	21.2	69.3	29.2	29.6	62.1	48.7	26.2
Level of Service (LOS)	D	C	C	F	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	30.2		C	34.7		C	38.1		D	48.7		D
Intersection Delay, s/veh / LOS	36.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.24	A	1.14	A	1.58	B	1.57	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing - AM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Interesction #2	File Name	02AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	48	40	26	19	30	37	27	646	9	17	414	32

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	72.0	9.0	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

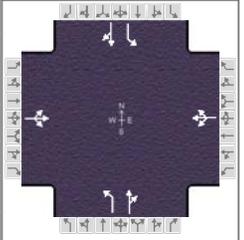
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		13.5		13.5		76.5		76.5
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		8.6		6.6				
Green Extension Time (g_e), s		0.4		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	124			93			29	712		18	485	
Adjusted Saturation Flow Rate (s), veh/h/ln	1622			1719			925	1895		750	1876	
Queue Service Time (g_s), s	2.1			0.0			0.8	10.8		0.7	6.3	
Cycle Queue Clearance Time (g_c), s	6.6			4.6			7.1	10.8		11.6	6.3	
Green Ratio (g/C)	0.10			0.10			0.80	0.80		0.80	0.80	
Capacity (c), veh/h	219			221			756	1516		589	1501	
Volume-to-Capacity Ratio (X)	0.566			0.423			0.039	0.470		0.031	0.323	
Back of Queue (Q), ft/ln (95 th percentile)	121.8			89.4			5.9	117.7		4.9	67.1	
Back of Queue (Q), veh/ln (95 th percentile)	4.9			3.6			0.2	4.7		0.2	2.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh	39.3			38.5			3.4	2.9		4.7	2.4	
Incremental Delay (d_2), s/veh	0.9			0.5			0.1	1.0		0.1	0.6	
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	40.2			39.0			3.5	3.9		4.8	3.0	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	40.2		D	39.0		D	3.9		A	3.1		A
Intersection Delay, s/veh / LOS	8.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.69	A	0.64	A	1.71	B	1.32	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing - PM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Interesction #2	File Name	02PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	20	19	25	4	23	15	21	468	5	17	606	16

Signal Information				Signal Phases											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	75.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

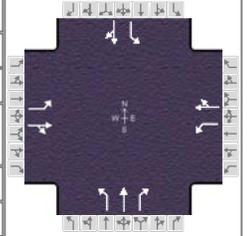
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		10.5		10.5		79.5		79.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		5.6		4.2				
Green Extension Time (g _e), s		0.2		0.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	70			46			23	514		18	676	
Adjusted Saturation Flow Rate (s), veh/h/ln	1655			1768			775	1896		900	1891	
Queue Service Time (g _s), s	1.4			0.0			0.7	5.6		0.4	8.3	
Cycle Queue Clearance Time (g _c), s	3.6			2.2			9.1	5.6		6.0	8.3	
Green Ratio (g/C)	0.07			0.07			0.83	0.83		0.83	0.83	
Capacity (c), veh/h	163			162			654	1580		774	1576	
Volume-to-Capacity Ratio (X)	0.427			0.282			0.035	0.325		0.024	0.429	
Back of Queue (Q), ft/ln (95 th percentile)	68.7			44.3			4.4	44.9		2.7	67.6	
Back of Queue (Q), veh/ln (95 th percentile)	2.7			1.8			0.2	1.8		0.1	2.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	40.8			40.2			3.1	1.7		2.4	1.9	
Incremental Delay (d ₂), s/veh	0.7			0.4			0.1	0.5		0.1	0.9	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	41.5			40.6			3.2	2.3		2.5	2.8	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	41.5		D	40.6		D	2.3		A	2.8		A
Intersection Delay, s/veh / LOS	5.9						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.58	B	1.58	B
Bicycle LOS Score / LOS	0.60	A	0.56	A	1.37	A	1.63	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Existing - AM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #3		File Name	03AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	45	371	59	55	347	60	117	514	70	68	403	50

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	55.5	25.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

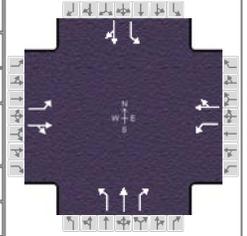
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		26.8		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16	
Adjusted Flow Rate (v), veh/h	49	467		60	442		127	559	76	74	492		
Adjusted Saturation Flow Rate (s), veh/h/ln	962	1854		940	1851		919	1900	1610	864	1863		
Queue Service Time (g _s), s	4.5	21.7		3.8	20.3		7.5	14.4	1.7	4.6	12.4		
Cycle Queue Clearance Time (g _c), s	24.8	21.7		25.5	20.3		19.9	14.4	1.7	18.9	12.4		
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62		
Capacity (c), veh/h	136	525		119	524		520	1172	993	475	1149		
Volume-to-Capacity Ratio (X)	0.360	0.890		0.501	0.844		0.245	0.477	0.077	0.156	0.429		
Back of Queue (Q), ft/ln (95 th percentile)	48.9	435.8		61.3	391.6		73.1	236.2	25.1	42.2	206.2		
Back of Queue (Q), veh/ln (95 th percentile)	2.0	17.4		2.5	15.7		2.9	9.4	1.0	1.7	8.2		
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	42.0	30.9		43.8	30.4		14.2	9.4	6.9	14.5	9.0		
Incremental Delay (d ₂), s/veh	0.6	16.5		1.2	11.4		1.1	1.4	0.2	0.7	1.2		
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	42.6	47.4		45.0	41.7		15.3	10.8	7.1	15.2	10.2		
Level of Service (LOS)	D	D		D	D		B	B	A	B	B		
Approach Delay, s/veh / LOS	47.0	D		42.1	D		11.1	B			10.8	B	
Intersection Delay, s/veh / LOS	25.6						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.34	A	1.32	A	1.74	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Existing - PM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #3		File Name	03PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	416	103	47	325	58	114	424	74	78	502	60

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	55.5	25.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

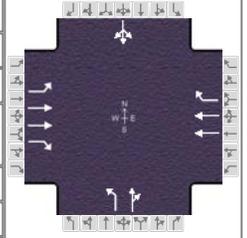
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	72	564		51	416		124	461	80	85	611	
Adjusted Saturation Flow Rate (s), veh/h/ln	985	1834		860	1850		823	1900	1610	946	1864	
Queue Service Time (g _s), s	6.5	25.5		0.0	18.7		9.1	11.0	1.8	4.5	16.8	
Cycle Queue Clearance Time (g _c), s	25.3	25.5		25.5	18.7		25.9	11.0	1.8	15.5	16.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	154	520		80	524		434	1172	993	547	1150	
Volume-to-Capacity Ratio (X)	0.466	1.085		0.639	0.794		0.286	0.393	0.081	0.155	0.531	
Back of Queue (Q), ft/ln (95 th percentile)	72.1	724.9		63.1	353.8		82.2	191.3	26.7	44.1	266	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	29.0		2.5	14.2		3.3	7.7	1.1	1.8	10.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	41.5	32.2		45.0	29.8		17.2	8.7	7.0	12.7	9.8	
Incremental Delay (d ₂), s/veh	0.8	64.6		12.4	7.6		1.6	1.0	0.2	0.6	1.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	42.3	96.8		57.4	37.4		18.9	9.7	7.1	13.3	11.6	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	90.7	F		39.6	D		11.1	B		11.8	B	
Intersection Delay, s/veh / LOS	37.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.54	B	1.26	A	1.59	B	1.64	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB				
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R		
Demand (v), veh/h	55	1033	206				999	117	362	167	4	61	114	44

Signal Information																				
Cycle, s	90.0	Reference Phase	2																	
Offset, s	0	Reference Point	End																	
Uncoordinated	No	Simult. Gap E/W	On	Green	42.2	13.8	20.5	0.0	0.0	0.0	1			2		3			4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6		7			8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0										

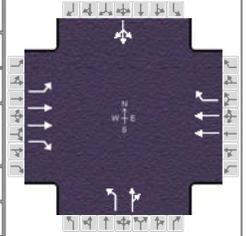
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		46.7		46.7		25.0		18.3
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.3
Queue Clearance Time (g _s), s						21.3		13.5
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.04

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	60	1123	224		1086	127	393	186			238	
Adjusted Saturation Flow Rate (s), veh/h/ln	528	1809	1610		1809	1610	1810	1892			1809	
Queue Service Time (g _s), s	8.7	21.5	7.7		20.5	4.1	19.3	7.6			11.5	
Cycle Queue Clearance Time (g _c), s	29.2	21.5	7.7		20.5	4.1	19.3	7.6			11.5	
Green Ratio (g/C)	0.47	0.47	0.47		0.47	0.47	0.23	0.23			0.15	
Capacity (c), veh/h	207	1695	755		1695	755	412	431			278	
Volume-to-Capacity Ratio (X)	0.289	0.662	0.297		0.640	0.169	0.955	0.431			0.857	
Back of Queue (Q), ft/ln (95 th percentile)	57.2	341	128.7		327	67.8	444.6	155.6			239.1	
Back of Queue (Q), veh/ln (95 th percentile)	2.3	13.6	5.1		13.1	2.7	17.8	6.2			9.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	29.3	18.4	14.8		18.2	13.8	34.3	29.8			37.1	
Incremental Delay (d ₂), s/veh	3.5	2.1	1.0		1.9	0.5	32.5	0.3			7.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	32.7	20.5	15.8		20.0	14.3	66.8	30.0			44.8	
Level of Service (LOS)	C	C	B		C	B	E	C			D	
Approach Delay, s/veh / LOS	20.2	C		19.4	B		55.0	D		44.8	D	
Intersection Delay, s/veh / LOS	27.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.65	B	1.49	A	1.44	A	0.88	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	32	1039	338				824	28		221	86	3	47	214	27

Signal Information																						
Cycle, s	90.0	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On	Green	45.4	17.1	14.0	0.0	0.0	0.0	1			2			3			4		
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6			7			8		
				Red	1.0	1.0	1.0	0.0	0.0	0.0												

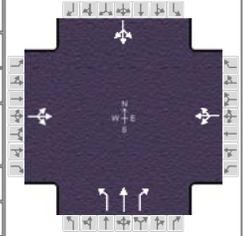
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.9		49.9		18.5		21.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						13.6		16.8
Green Extension Time (g _e), s		0.0		0.0		0.4		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						0.07		0.69

Movement Group Results	EB			WB			NB			SB			
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R	
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14	
Adjusted Flow Rate (v), veh/h	35	1129	367		896	30	240	97			313		
Adjusted Saturation Flow Rate (s), veh/h/ln	631	1809	1610		1809	1610	1810	1889			1854		
Queue Service Time (g _s), s	3.5	20.3	13.2		14.7	0.9	11.6	4.1			14.8		
Cycle Queue Clearance Time (g _c), s	18.1	20.3	13.2		14.7	0.9	11.6	4.1			14.8		
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.19		
Capacity (c), veh/h	295	1824	812		1824	812	282	295			352		
Volume-to-Capacity Ratio (X)	0.118	0.619	0.453		0.491	0.037	0.850	0.328			0.890		
Back of Queue (Q), ft/ln (95 th percentile)	25.2	317.3	211.2		242.9	13.8	240.4	85.4			323.2		
Back of Queue (Q), veh/ln (95 th percentile)	1.0	12.7	8.4		9.7	0.6	9.6	3.4			12.9		
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00		
Uniform Delay (d ₁), s/veh	20.7	16.1	14.3		14.7	11.3	37.0	33.8			35.6		
Incremental Delay (d ₂), s/veh	0.8	1.6	1.8		0.9	0.1	7.6	0.2			16.4		
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0		
Control Delay (d), s/veh	21.5	17.7	16.2		15.6	11.4	44.5	34.0			51.9		
Level of Service (LOS)	C	B	B		B	B	D	C			D		
Approach Delay, s/veh / LOS	17.4	B		15.5	B		41.5	D			51.9	D	
Intersection Delay, s/veh / LOS	22.9						C						

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.89	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.75	B	1.25	A	1.04	A	1.00	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	63	400	55	59	271	8	48	280	150	21	262	59

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	56.7	24.3	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		61.2		61.2		28.8		28.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						23.2		20.2
Green Extension Time (g _e), s		0.0		0.0		1.4		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						0.24		0.08

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	563			367			52	304	163	372		
Adjusted Saturation Flow Rate (s), veh/h/ln	1751			1644			1048	1900	1610	1731		
Queue Service Time (g _s), s	0.3			0.0			4.3	12.6	7.4	6.1		
Cycle Queue Clearance Time (g _c), s	14.3			8.0			21.2	12.6	7.4	18.2		
Green Ratio (g/C)	0.63			0.63			0.27	0.27	0.27	0.27		
Capacity (c), veh/h	1152			1087			164	508	431	506		
Volume-to-Capacity Ratio (X)	0.489			0.338			0.318	0.599	0.378	0.735		
Back of Queue (Q), ft/ln (95 th percentile)	235.6			145.1			50.5	238.9	127	308.4		
Back of Queue (Q), veh/ln (95 th percentile)	9.4			5.8			2.0	9.6	5.1	12.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	8.7			7.5			40.1	28.7	26.9	30.6		
Incremental Delay (d ₂), s/veh	1.5			0.8			0.4	0.4	0.2	2.4		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	10.2			8.4			40.5	29.2	27.1	32.9		
Level of Service (LOS)	B			A			D	C	C	C		
Approach Delay, s/veh / LOS	10.2	B		8.4	A		29.6	C		32.9	C	
Intersection Delay, s/veh / LOS	20.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.23	B	1.65	B	1.70	B	1.70	B
Bicycle LOS Score / LOS	1.42	A	1.09	A	1.34	A	1.10	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Existing - PM	PHF	0.92
Urban Street	Otis / Santa Ana		Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #10		File Name	10PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	56	390	71	93	345	10	61	264	112	10	358	89

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

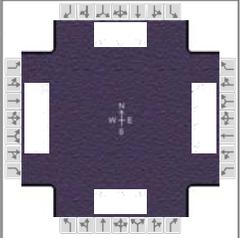
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						30.5		24.2
Green Extension Time (g _e), s		0.0		0.0		0.0		1.5
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.38

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	562			487			66	287	122	497		
Adjusted Saturation Flow Rate (s), veh/h/ln	1744			1579			924	1900	1610	1825		
Queue Service Time (g _s), s	1.0			0.0			6.3	10.6	4.9	3.3		
Cycle Queue Clearance Time (g _c), s	17.5			16.5			28.5	10.6	4.9	22.2		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1023			935			166	643	545	659		
Volume-to-Capacity Ratio (X)	0.549			0.521			0.400	0.446	0.223	0.754		
Back of Queue (Q), ft/ln (95 th percentile)	287.1			255.5			64.9	204.6	81.5	387.7		
Back of Queue (Q), veh/ln (95 th percentile)	11.5			10.2			2.6	8.2	3.3	15.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.4			11.9			39.9	23.2	21.3	27.0		
Incremental Delay (d ₂), s/veh	2.1			2.1			0.6	0.2	0.1	4.4		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.6			14.0			40.5	23.4	21.4	31.4		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.6	B		14.0	B		25.2	C		31.4	C	
Intersection Delay, s/veh / LOS	21.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.41	A	1.29	A	1.27	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #1	File Name	01AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	29	983	82	175	1100	161	169	460	298	110	226	73

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.3	1.7	29.8	7.5	1.0	24.2			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	3.5	0.0	3.5			
				Red	1.0	1.0	1.0	1.0	0.0	1.0			

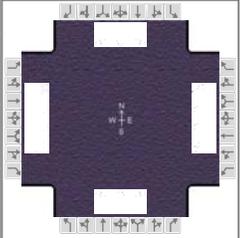
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.8	34.3	14.0	40.5	13.0	29.8	12.0	28.7
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g _s), s	3.5		11.5		10.5	25.1	7.8	11.8
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	0.2	0.0	2.3
Phase Call Probability	0.55		0.99		0.99	1.00	0.95	1.00
Max Out Probability	0.00		1.00		1.00	1.00	1.00	0.05

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	32	782	376	190	935	436	184	500	324	120	246	79
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1822	1810	1900	1772	1810	1900	1610	1810	1900	1610
Queue Service Time (g _s), s	1.5	15.6	15.6	9.5	17.6	17.6	8.5	23.1	16.3	5.8	9.8	3.4
Cycle Queue Clearance Time (g _c), s	1.5	15.6	15.6	9.5	17.6	17.6	8.5	23.1	16.3	5.8	9.8	3.4
Green Ratio (g/C)	0.04	0.33	0.33	0.11	0.40	0.40	0.09	0.28	0.28	0.08	0.27	0.27
Capacity (c), veh/h	66	1257	603	191	1520	709	171	534	452	150	512	434
Volume-to-Capacity Ratio (X)	0.479	0.622	0.623	0.996	0.615	0.615	1.075	0.937	0.716	0.797	0.480	0.183
Back of Queue (Q), ft/ln (95 th percentile)	31.9	287.3	291.7	299	308.5	305	323.4	491.6	270	149.9	197.3	58.9
Back of Queue (Q), veh/ln (95 th percentile)	1.3	11.5	11.7	12.0	12.3	12.2	12.9	19.7	10.8	6.0	7.9	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.5	25.4	25.4	40.2	21.5	21.5	40.8	31.6	29.1	40.5	27.6	25.3
Incremental Delay (d ₂), s/veh	2.0	2.3	4.8	63.8	1.9	4.0	90.2	23.7	4.5	17.7	0.3	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.5	27.7	30.2	104.0	23.4	25.5	130.9	55.3	33.7	58.2	27.9	25.3
Level of Service (LOS)	D	C	C	F	C	C	F	E	C	E	C	C
Approach Delay, s/veh / LOS	28.9		C	33.8		C	62.1		E	35.6		D
Intersection Delay, s/veh / LOS	39.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.14	A	1.35	A	2.15	B	1.22	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #1	File Name	01PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	38	1076	156	181	827	88	133	254	224	125	406	73

Signal Information				Signal Timing (s)													
Cycle, s	90.0	Reference Phase	2	Green	3.9	1.1	30.8	8.3	0.2	23.2	Green	3.9	1.1	30.8	8.3	0.2	23.2
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	3.5	0.0	3.5	Yellow	3.5	3.5	3.5	3.5	0.0	3.5
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	1.0	0.0	1.0	Red	1.0	1.0	1.0	1.0	0.0	1.0
Force Mode	Float	Simult. Gap N/S	On														

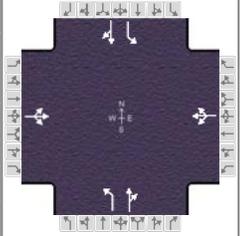
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.4	35.3	14.0	40.9	13.0	27.9	12.8	27.7
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g _s), s	4.0		11.5		9.1	13.9	8.6	22.2
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	1.9	0.0	1.0
Phase Call Probability	0.64		0.99		0.97	1.00	0.97	1.00
Max Out Probability	0.02		1.00		1.00	0.07	1.00	0.97

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	41	913	426	197	673	321	145	276	243	136	441	79
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1773	1810	1900	1803	1810	1900	1610	1810	1900	1610
Queue Service Time (g _s), s	2.0	18.7	18.7	9.5	11.5	11.6	7.1	11.3	11.9	6.6	20.2	3.5
Cycle Queue Clearance Time (g _c), s	2.0	18.7	18.7	9.5	11.5	11.6	7.1	11.3	11.9	6.6	20.2	3.5
Green Ratio (g/C)	0.04	0.34	0.34	0.11	0.40	0.40	0.09	0.26	0.26	0.09	0.26	0.26
Capacity (c), veh/h	78	1301	607	191	1539	730	171	493	418	168	490	415
Volume-to-Capacity Ratio (X)	0.532	0.702	0.702	1.030	0.438	0.440	0.846	0.560	0.583	0.810	0.901	0.191
Back of Queue (Q), ft/ln (95 th percentile)	41.6	334.5	335	319.4	217	216.2	197.8	218.2	199.9	179.6	422.6	60
Back of Queue (Q), veh/ln (95 th percentile)	1.7	13.4	13.4	12.8	8.7	8.6	7.9	8.7	8.0	7.2	16.9	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.2	25.6	25.6	40.3	19.4	19.4	40.1	28.9	29.1	40.1	32.3	26.1
Incremental Delay (d ₂), s/veh	2.1	3.2	6.7	73.2	0.9	1.9	29.2	0.5	0.9	22.6	16.4	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.3	28.8	32.3	113.4	20.3	21.3	69.3	29.4	29.9	62.6	48.7	26.2
Level of Service (LOS)	D	C	C	F	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	30.3	C		35.9	D		38.3	D		48.8	D	
Intersection Delay, s/veh / LOS	36.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.25	A	1.14	A	1.58	B	1.57	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #2	File Name	02AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	65	40	26	19	30	37	27	646	9	17	414	47

Signal Information				Signal Timing (s)									
Cycle, s	90.0	Reference Phase	2	Green	70.7	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On										

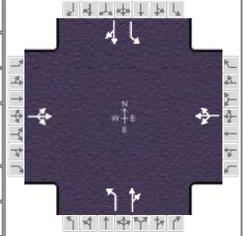
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		14.8		14.8		75.2		75.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		9.8		6.5				
Green Extension Time (g _e), s		0.4		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	142			93			29	712		18	501	
Adjusted Saturation Flow Rate (s), veh/h/ln	1578			1723			911	1895		750	1866	
Queue Service Time (g _s), s	3.4			0.0			0.9	11.6		0.8	7.1	
Cycle Queue Clearance Time (g _c), s	7.8			4.5			8.0	11.6		12.4	7.1	
Green Ratio (g/C)	0.11			0.11			0.79	0.79		0.79	0.79	
Capacity (c), veh/h	240			245			725	1490		573	1467	
Volume-to-Capacity Ratio (X)	0.594			0.381			0.040	0.478		0.032	0.342	
Back of Queue (Q), ft/ln (95 th percentile)	139.7			87.7			6.7	135.3		5.4	80.6	
Back of Queue (Q), veh/ln (95 th percentile)	5.6			3.5			0.3	5.4		0.2	3.2	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	38.7			37.3			4.0	3.3		5.4	2.8	
Incremental Delay (d ₂), s/veh	0.9			0.4			0.1	1.1		0.1	0.6	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	39.6			37.7			4.1	4.4		5.5	3.5	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	39.6	D		37.7	D		4.4	A		3.5	A	
Intersection Delay, s/veh / LOS	9.5						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.72	A	0.64	A	1.71	B	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #2	File Name	02PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	24	19	25	4	23	15	21	468	5	17	606	20

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On	Green	74.9	6.1	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0		
				Red	1.0	1.0	0.0	0.0	0.0	0.0		

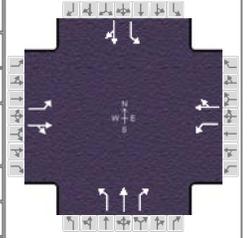
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		10.6		10.6		79.4		79.4
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		5.9		4.2				
Green Extension Time (g _e), s		0.2		0.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	74			46			23	514		18	680	
Adjusted Saturation Flow Rate (s), veh/h/ln	1640			1772			772	1896		900	1889	
Queue Service Time (g _s), s	1.7			0.0			0.7	5.6		0.4	8.5	
Cycle Queue Clearance Time (g _c), s	3.9			2.2			9.2	5.6		6.1	8.5	
Green Ratio (g/C)	0.07			0.07			0.83	0.83		0.83	0.83	
Capacity (c), veh/h	165			164			650	1579		773	1573	
Volume-to-Capacity Ratio (X)	0.448			0.279			0.035	0.326		0.024	0.433	
Back of Queue (Q), ft/ln (95 th percentile)	73.3			44.2			4.4	44.9		2.8	68.1	
Back of Queue (Q), veh/ln (95 th percentile)	2.9			1.8			0.2	1.8		0.1	2.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	40.9			40.1			3.2	1.7		2.4	2.0	
Incremental Delay (d ₂), s/veh	0.7			0.3			0.1	0.5		0.1	0.9	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	41.6			40.5			3.3	2.3		2.5	2.8	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	41.6	D		40.5	D		2.3	A		2.8	A	
Intersection Delay, s/veh / LOS	6.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.58	B	1.58	B
Bicycle LOS Score / LOS	0.61	A	0.56	A	1.37	A	1.64	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #3	File Name	03AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	45	392	59	64	365	60	117	514	80	68	403	50

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Fixed	Simult. Gap N/S	On	Green	55.5	25.5	0.0	0.0	0.0	0.0				
				Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0				

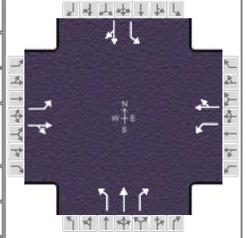
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	49	490		70	462		127	559	87	74	492	
Adjusted Saturation Flow Rate (s), veh/h/ln	945	1856		921	1853		919	1900	1610	864	1863	
Queue Service Time (g _s), s	4.1	23.1		2.4	21.4		7.5	14.4	2.0	4.6	12.4	
Cycle Queue Clearance Time (g _c), s	25.5	23.1		25.5	21.4		19.9	14.4	2.0	18.9	12.4	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	123	526		104	525		520	1172	993	475	1149	
Volume-to-Capacity Ratio (X)	0.398	0.932		0.668	0.880		0.245	0.477	0.088	0.156	0.429	
Back of Queue (Q), ft/ln (95 th percentile)	49.8	485.5		85.4	425.4		73.1	236.2	28.9	42.2	206.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.0	19.4		3.4	17.0		2.9	9.4	1.2	1.7	8.2	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	43.2	31.4		44.6	30.8		14.2	9.4	7.0	14.5	9.0	
Incremental Delay (d ₂), s/veh	0.8	23.3		12.5	15.3		1.1	1.4	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	44.0	54.7		57.1	46.1		15.3	10.8	7.2	15.2	10.2	
Level of Service (LOS)	D	D		E	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	53.7		D	47.5		D	11.1		B	10.8		B
Intersection Delay, s/veh / LOS	28.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.38	A	1.36	A	1.76	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #3	File Name	03PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	421	103	49	329	58	114	424	77	78	502	60

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.5	25.5	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

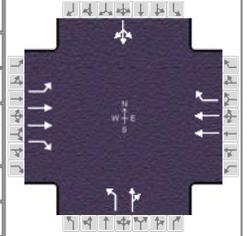
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	72	570		53	421		124	461	84	85	611	
Adjusted Saturation Flow Rate (s), veh/h/ln	982	1835		856	1850		823	1900	1610	946	1864	
Queue Service Time (g _s), s	6.5	25.5		0.0	19.0		9.1	11.0	1.9	4.5	16.8	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.0		25.9	11.0	1.9	15.5	16.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	151	520		80	524		434	1172	993	547	1150	
Volume-to-Capacity Ratio (X)	0.475	1.095		0.666	0.802		0.286	0.393	0.084	0.155	0.531	
Back of Queue (Q), ft/ln (95 th percentile)	72.3	744.6		68.6	359.6		82.2	190.9	27.7	44.1	264.8	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	29.8		2.7	14.4		3.3	7.6	1.1	1.8	10.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	41.8	32.3		45.0	29.9		17.2	8.7	7.0	12.7	9.8	
Incremental Delay (d ₂), s/veh	0.9	68.0		15.6	8.1		1.6	1.0	0.2	0.6	1.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	42.6	100.3		60.6	38.0		18.9	9.7	7.1	13.3	11.6	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	93.8	F		40.6	D		11.1	B		11.8	B	
Intersection Delay, s/veh / LOS	38.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.55	B	1.27	A	1.59	B	1.64	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB				
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R		
Demand (v), veh/h	55	1084	206				999	117	408	182	4	61	131	44

Signal Information																						
Cycle, s	90.0	Reference Phase	2																			
Offset, s	0	Reference Point	End																			
Uncoordinated	No	Simult. Gap E/W	On	Green	41.3	14.7	20.5	0.0	0.0	0.0	1			2			3			4		
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5			6			7			8		
				Red	1.0	1.0	1.0	0.0	0.0	0.0												

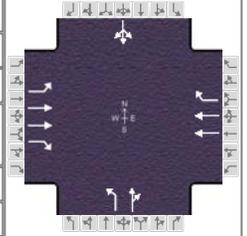
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		45.8		45.8		25.0		19.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						22.5		14.4
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.09

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	60	1178	224		1086	127	443	202			257	
Adjusted Saturation Flow Rate (s), veh/h/ln	528	1809	1610		1809	1610	1810	1893			1816	
Queue Service Time (g _s), s	8.9	23.5	7.9		20.9	4.2	20.5	8.3			12.4	
Cycle Queue Clearance Time (g _c), s	29.8	23.5	7.9		20.9	4.2	20.5	8.3			12.4	
Green Ratio (g/C)	0.46	0.46	0.46		0.46	0.46	0.23	0.23			0.16	
Capacity (c), veh/h	200	1661	739		1661	739	412	431			296	
Volume-to-Capacity Ratio (X)	0.299	0.709	0.303		0.654	0.172	1.076	0.469			0.866	
Back of Queue (Q), ft/ln (95 th percentile)	58.7	370.1	131.5		333.1	69.4	601.5	170.9			260.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.3	14.8	5.3		13.3	2.8	24.1	6.8			10.4	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	30.3	19.5	15.3		18.8	14.3	34.8	30.0			36.7	
Incremental Delay (d ₂), s/veh	3.8	2.6	1.1		2.0	0.5	66.1	0.3			10.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	34.1	22.1	16.3		20.8	14.8	100.9	30.3			46.9	
Level of Service (LOS)	C	C	B		C	B	F	C			D	
Approach Delay, s/veh / LOS	21.7	C		20.2	C		78.8	E		46.9	D	
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.68	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.69	B	1.49	A	1.55	B	0.91	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	32	1052	338				824	28		232	90	3	47	218	27

Signal Information				Signal Phases											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Float	Simult. Gap N/S	On												
		Green	44.6	17.3	14.6	0.0	0.0	0.0							
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0							
		Red	1.0	1.0	1.0	0.0	0.0	0.0							

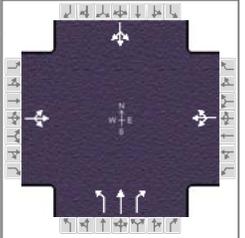
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.1		49.1		19.1		21.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						14.2		17.0
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.11		0.81

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	35	1143	367		896	30	252	101			317	
Adjusted Saturation Flow Rate (s), veh/h/ln	631	1809	1610		1809	1610	1810	1889			1854	
Queue Service Time (g _s), s	3.5	21.0	13.4		14.9	0.9	12.2	4.3			15.0	
Cycle Queue Clearance Time (g _c), s	18.5	21.0	13.4		14.9	0.9	12.2	4.3			15.0	
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.19	
Capacity (c), veh/h	288	1793	798		1793	798	294	307			356	
Volume-to-Capacity Ratio (X)	0.121	0.638	0.460		0.500	0.038	0.857	0.329			0.892	
Back of Queue (Q), ft/ln (95 th percentile)	25.7	328.1	214.8		247	14.1	253.9	88.7			328.3	
Back of Queue (Q), veh/ln (95 th percentile)	1.0	13.1	8.6		9.9	0.6	10.2	3.5			13.1	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	21.4	16.7	14.8		15.2	11.7	36.7	33.3			35.5	
Incremental Delay (d ₂), s/veh	0.9	1.7	1.9		1.0	0.1	9.2	0.2			16.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	22.3	18.5	16.7		16.2	11.8	45.9	33.6			52.3	
Level of Service (LOS)	C	B	B		B	B	D	C			D	
Approach Delay, s/veh / LOS	18.2	B		16.1	B		42.3	D		52.3	D	
Intersection Delay, s/veh / LOS	23.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.76	B	1.25	A	1.07	A	1.01	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	111	400	55	59	271	8	48	321	150	21	299	102

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	52.4	28.6	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

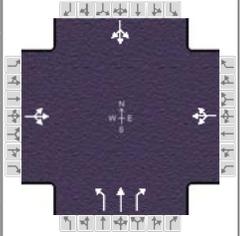
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		56.9		56.9		33.1		33.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						27.8		23.4
Green Extension Time (g _e), s		0.0		0.0		0.9		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.32

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	615			367			52	349	163	459		
Adjusted Saturation Flow Rate (s), veh/h/ln	1668			1625			968	1900	1610	1773		
Queue Service Time (g _s), s	11.8			0.0			4.7	13.8	6.9	7.6		
Cycle Queue Clearance Time (g _c), s	20.9			9.0			25.8	13.8	6.9	21.4		
Green Ratio (g/C)	0.58			0.58			0.32	0.32	0.32	0.32		
Capacity (c), veh/h	1021			995			159	601	509	603		
Volume-to-Capacity Ratio (X)	0.602			0.369			0.327	0.580	0.320	0.761		
Back of Queue (Q), ft/ln (95 th percentile)	311.9			172			50.7	256.6	116.8	368		
Back of Queue (Q), veh/ln (95 th percentile)	12.5			6.9			2.0	10.3	4.7	14.7		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	11.9			9.7			40.1	25.8	23.4	28.2		
Incremental Delay (d ₂), s/veh	2.6			1.1			0.4	0.6	0.1	4.3		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.6			10.7			40.5	26.4	23.5	32.6		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.6	B		10.7	B		26.9	C		32.6	C	
Intersection Delay, s/veh / LOS	21.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.65	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.50	B	1.09	A	1.42	A	1.24	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #10	File Name	10PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	390	71	93	345	10	61	274	112	10	367	99

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

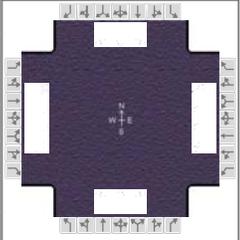
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.1		25.5
Green Extension Time (g _e), s		0.0		0.0		0.0		1.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.60

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	575			487			66	298	122	517		
Adjusted Saturation Flow Rate (s), veh/h/ln	1719			1570			907	1900	1610	1821		
Queue Service Time (g _s), s	1.7			0.0			6.5	11.1	4.9	4.6		
Cycle Queue Clearance Time (g _c), s	18.5			16.8			30.1	11.1	4.9	23.5		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1010			929			150	644	546	658		
Volume-to-Capacity Ratio (X)	0.569			0.524			0.441	0.463	0.223	0.786		
Back of Queue (Q), ft/ln (95 th percentile)	296.3			256.2			66.4	211.8	81.5	413.2		
Back of Queue (Q), veh/ln (95 th percentile)	11.9			10.2			2.7	8.5	3.3	16.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.6			12.0			41.3	23.3	21.3	27.4		
Incremental Delay (d ₂), s/veh	2.3			2.1			0.8	0.2	0.1	5.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.9			14.1			42.1	23.5	21.4	33.2		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.9	B		14.1	B		25.5	C		33.2	C	
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.44	A	1.29	A	1.29	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future - AM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #1	File Name	01AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	985	84	169	1111	161	172	470	292	107	233	74

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	3.4	1.6	29.7	7.3	1.2	24.3			
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	3.5	0.0	3.5			
				Red	1.0	1.0	1.0	1.0	0.0	1.0			

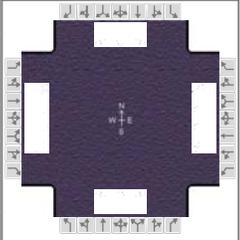
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.9	34.2	14.0	40.3	13.0	30.0	11.8	28.8
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g_s), s	3.6		11.1		10.5	25.7	7.7	12.1
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
Phase Call Probability	0.57		0.99		0.99	1.00	0.95	1.00
Max Out Probability	0.01		1.00		1.00	1.00	1.00	0.06

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	34	785	377	184	943	440	187	511	317	116	253	80
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1821	1810	1900	1773	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	1.6	15.7	15.7	9.1	17.9	17.9	8.5	23.7	15.8	5.7	10.1	3.5
Cycle Queue Clearance Time (g_c), s	1.6	15.7	15.7	9.1	17.9	17.9	8.5	23.7	15.8	5.7	10.1	3.5
Green Ratio (g/C)	0.04	0.33	0.33	0.11	0.40	0.40	0.09	0.28	0.28	0.08	0.27	0.27
Capacity (c), veh/h	69	1255	601	191	1512	705	171	538	456	146	513	434
Volume-to-Capacity Ratio (X)	0.491	0.626	0.627	0.962	0.624	0.624	1.094	0.949	0.696	0.795	0.494	0.185
Back of Queue (Q), ft/ln (95 th percentile)	34.1	288.4	293.1	276.1	312.3	309.1	335	511.8	261.6	144.2	202.9	59.7
Back of Queue (Q), veh/ln (95 th percentile)	1.4	11.5	11.7	11.0	12.5	12.4	13.4	20.5	10.5	5.8	8.1	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	42.4	25.4	25.5	40.1	21.7	21.7	40.8	31.6	28.8	40.6	27.7	25.3
Incremental Delay (d_2), s/veh	2.0	2.4	4.9	53.6	1.9	4.1	96.2	26.3	3.9	16.7	0.3	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.4	27.8	30.3	93.6	23.6	25.8	136.9	57.9	32.6	57.3	28.0	25.3
Level of Service (LOS)	D	C	C	F	C	C	F	E	C	E	C	C
Approach Delay, s/veh / LOS	29.1		C	32.5		C	64.6		E	35.1		D
Intersection Delay, s/veh / LOS	39.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.15	A	1.35	A	2.16	B	1.23	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future - PM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersection #1	File Name	01PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	40	1111	159	186	858	92	136	262	230	127	418	75

Signal Information															
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End												
Uncoordinated	No	Simult. Gap E/W	On												
Force Mode	Float	Simult. Gap N/S	On												
		Green		4.0	1.0	30.3	8.5	23.7	0.0						
		Yellow		3.5	3.5	3.5	3.5	3.5	0.0						
		Red		1.0	1.0	1.0	1.0	1.0	0.0						

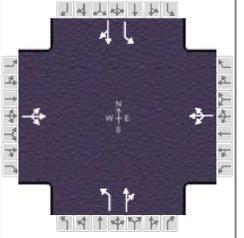
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.5	34.8	14.0	40.3	13.0	28.2	13.0	28.2
Change Period, ($Y+R_c$), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g_s), s	4.1		11.5		9.3	14.2	8.7	22.8
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.9
Phase Call Probability	0.66		0.99		0.98	1.00	0.97	1.00
Max Out Probability	0.02		1.00		1.00	0.08	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	43	941	439	202	699	333	148	285	250	138	454	82
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1774	1810	1900	1803	1810	1900	1610	1810	1900	1610
Queue Service Time (g_s), s	2.1	19.6	19.7	9.5	12.2	12.3	7.3	11.7	12.2	6.7	20.8	3.5
Cycle Queue Clearance Time (g_c), s	2.1	19.6	19.7	9.5	12.2	12.3	7.3	11.7	12.2	6.7	20.8	3.5
Green Ratio (g/C)	0.04	0.34	0.34	0.11	0.40	0.40	0.09	0.26	0.26	0.09	0.26	0.26
Capacity (c), veh/h	80	1279	597	191	1512	717	171	501	425	170	500	424
Volume-to-Capacity Ratio (X)	0.544	0.736	0.736	1.058	0.462	0.464	0.865	0.568	0.589	0.812	0.908	0.192
Back of Queue (Q), ft/ln (95 th percentile)	43.8	351.3	353.7	337.2	227.7	227.2	206.5	224	204.5	183.7	437.9	61.2
Back of Queue (Q), veh/ln (95 th percentile)	1.8	14.1	14.1	13.5	9.1	9.1	8.3	9.0	8.2	7.3	17.5	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	42.1	26.3	26.3	40.3	20.0	20.0	40.2	28.7	28.9	40.0	32.1	25.7
Incremental Delay (d_2), s/veh	2.1	3.8	7.9	81.4	1.0	2.2	32.9	0.6	1.0	23.2	17.7	0.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.3	30.1	34.2	121.7	21.0	22.2	73.1	29.3	29.9	63.2	49.8	25.8
Level of Service (LOS)	D	C	C	F	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	31.8		C	37.8		D	39.0		D	49.7		D
Intersection Delay, s/veh / LOS	37.9						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.27	A	1.17	A	1.61	B	1.60	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future - AM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Interesction #2	File Name	02AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	52	41	27	19	31	38	28	662	9	17	426	36

Signal Information				Signal Timing (s)								Signal Phases			
Cycle, s	90.0	Reference Phase	2	Green	71.6	9.4	0.0	0.0	0.0	0.0	1	2	3	4	
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5	6	7	8	
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												

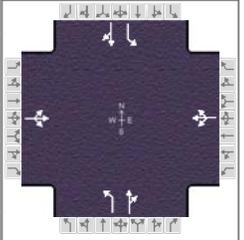
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		13.9		13.9		76.1		76.1
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		9.0		6.6				
Green Extension Time (g_e), s		0.4		0.4		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	130			96			30	729		18	502	
Adjusted Saturation Flow Rate (s), veh/h/ln	1613			1722			910	1895		738	1874	
Queue Service Time (g_s), s	2.4			0.0			0.9	11.5		0.8	6.7	
Cycle Queue Clearance Time (g_c), s	7.0			4.6			7.6	11.5		12.3	6.7	
Green Ratio (g/C)	0.10			0.10			0.80	0.80		0.80	0.80	
Capacity (c), veh/h	226			229			736	1508		572	1490	
Volume-to-Capacity Ratio (X)	0.577			0.418			0.041	0.484		0.032	0.337	
Back of Queue (Q), ft/ln (95 th percentile)	128.2			91			6.4	128.6		5.2	73.6	
Back of Queue (Q), veh/ln (95 th percentile)	5.1			3.6			0.3	5.1		0.2	2.9	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh	39.1			38.2			3.6	3.1		5.1	2.6	
Incremental Delay (d_2), s/veh	0.9			0.5			0.1	1.1		0.1	0.6	
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	40.0			38.6			3.7	4.2		5.2	3.2	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	40.0		D	38.6		D	4.2		A	3.3		A
Intersection Delay, s/veh / LOS	9.1						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.70	A	0.65	A	1.74	B	1.35	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future - PM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Interesction #2	File Name	02PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	24	19	26	4	23	15	21	481	5	17	624	19

Signal Information				Signal Phases							
Cycle, s	90.0	Reference Phase	2	1	2	3	4	5	6	7	8
Offset, s	0	Reference Point	End	Green	74.9	6.1	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0

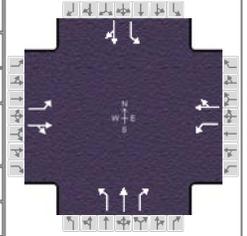
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		10.6		10.6		79.4		79.4
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g_s), s		5.9		4.2				
Green Extension Time (g_e), s		0.2		0.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	75			46			23	528		18	699	
Adjusted Saturation Flow Rate (s), veh/h/ln	1641			1772			759	1896		889	1890	
Queue Service Time (g_s), s	1.8			0.0			0.7	5.8		0.4	8.9	
Cycle Queue Clearance Time (g_c), s	3.9			2.2			9.7	5.8		6.3	8.9	
Green Ratio (g/C)	0.07			0.07			0.83	0.83		0.83	0.83	
Capacity (c), veh/h	166			165			636	1577		761	1572	
Volume-to-Capacity Ratio (X)	0.452			0.277			0.036	0.335		0.024	0.445	
Back of Queue (Q), ft/ln (95 th percentile)	74.3			44.2			4.6	47.6		2.9	73	
Back of Queue (Q), veh/ln (95 th percentile)	3.0			1.8			0.2	1.9		0.1	2.9	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d_1), s/veh	40.9			40.1			3.3	1.8		2.5	2.0	
Incremental Delay (d_2), s/veh	0.7			0.3			0.1	0.6		0.1	0.9	
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	41.6			40.4			3.4	2.3		2.6	2.9	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	41.6		D	40.4		D	2.4		A	2.9		A
Intersection Delay, s/veh / LOS	6.0						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.58	B	1.58	B
Bicycle LOS Score / LOS	0.61	A	0.56	A	1.40	A	1.67	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - AM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #3		File Name	03AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	380	60	59	360	61	119	526	73	69	414	51

Signal Information				Signal Timing (s)								Signal Phases				
Cycle, s	90.0	Reference Phase	2	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On													

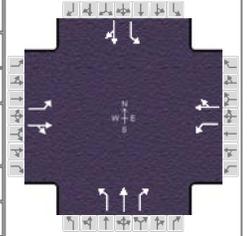
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	51	478		64	458		129	572	79	75	505	
Adjusted Saturation Flow Rate (s), veh/h/ln	949	1854		931	1852		908	1900	1610	854	1863	
Queue Service Time (g _s), s	4.3	22.4		3.1	21.2		7.9	14.9	1.8	4.8	12.8	
Cycle Queue Clearance Time (g _c), s	25.5	22.4		25.5	21.2		20.7	14.9	1.8	19.6	12.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	126	525		112	525		510	1172	993	466	1149	
Volume-to-Capacity Ratio (X)	0.407	0.910		0.573	0.872		0.253	0.488	0.080	0.161	0.440	
Back of Queue (Q), ft/ln (95 th percentile)	52	458.6		70.1	417.7		75.8	242.5	26.3	43.5	212.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.1	18.3		2.8	16.7		3.0	9.7	1.1	1.7	8.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	43.1	31.1		44.2	30.7		14.5	9.5	7.0	14.8	9.1	
Incremental Delay (d ₂), s/veh	0.8	19.5		4.5	14.3		1.2	1.5	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.9	50.7		48.8	45.0		15.7	10.9	7.1	15.6	10.3	
Level of Service (LOS)	D	D		D	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	50.0	D		45.5	D		11.3	B		11.0	B	
Intersection Delay, s/veh / LOS	27.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.36	A	1.35	A	1.78	B	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - PM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #3		File Name	03PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	432	105	53	338	59	116	436	81	80	517	62

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	55.5	25.5	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0				

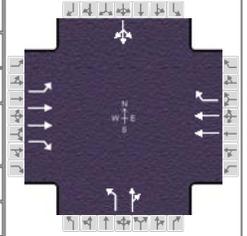
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	74	584		58	432		126	474	88	87	629	
Adjusted Saturation Flow Rate (s), veh/h/ln	972	1835		844	1850		809	1900	1610	935	1864	
Queue Service Time (g _s), s	5.9	25.5		0.0	19.6		9.6	11.5	2.0	4.7	17.6	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.6		27.2	11.5	2.0	16.2	17.6	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	144	520		80	524		421	1172	993	537	1150	
Volume-to-Capacity Ratio (X)	0.515	1.122		0.720	0.823		0.300	0.404	0.089	0.162	0.547	
Back of Queue (Q), ft/ln (95 th percentile)	76	798.8		80.9	374.9		85.8	196.7	29.3	46	274.8	
Back of Queue (Q), veh/ln (95 th percentile)	3.0	32.0		3.2	15.0		3.4	7.9	1.2	1.8	11.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	42.5	32.3		45.0	30.1		17.9	8.8	7.0	12.9	10.0	
Incremental Delay (d ₂), s/veh	1.4	77.6		23.6	9.6		1.8	1.0	0.2	0.6	1.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.9	109.9		68.6	39.7		19.7	9.8	7.2	13.6	11.9	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	102.4	F		43.2	D		11.3	B		12.1	B	
Intersection Delay, s/veh / LOS	41.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.57	B	1.29	A	1.62	B	1.67	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	56	1072	210				369	170	4	64	116	45

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	41.9	14.1	20.5	0.0	0.0	0.0				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

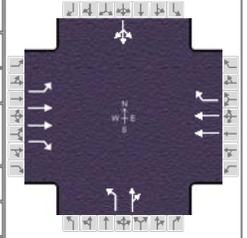
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		46.4		46.4		25.0		18.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.3
Queue Clearance Time (g _s), s						21.8		13.9
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.05

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1165	228		1133	133	401	189			245	
Adjusted Saturation Flow Rate (s), veh/h/ln	505	1809	1610		1809	1610	1810	1892			1809	
Queue Service Time (g _s), s	9.6	22.9	8.0		21.9	4.3	19.8	7.7			11.9	
Cycle Queue Clearance Time (g _c), s	31.6	22.9	8.0		21.9	4.3	19.8	7.7			11.9	
Green Ratio (g/C)	0.47	0.47	0.47		0.47	0.47	0.23	0.23			0.16	
Capacity (c), veh/h	192	1683	749		1683	749	412	431			284	
Volume-to-Capacity Ratio (X)	0.317	0.692	0.305		0.673	0.177	0.973	0.439			0.860	
Back of Queue (Q), ft/ln (95 th percentile)	61.2	359.9	132.8		347.1	71.6	466.8	158.6			246.7	
Back of Queue (Q), veh/ln (95 th percentile)	2.4	14.4	5.3		13.9	2.9	18.7	6.3			9.9	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	31.0	19.0	15.0		18.7	14.0	34.5	29.8			37.0	
Incremental Delay (d ₂), s/veh	4.3	2.4	1.1		2.2	0.5	37.0	0.3			8.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	35.3	21.4	16.1		20.9	14.5	71.5	30.1			45.6	
Level of Service (LOS)	D	C	B		C	B	E	C			D	
Approach Delay, s/veh / LOS	21.1	C		20.2	C		58.2	E		45.6	D	
Intersection Delay, s/veh / LOS	28.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.69	B	1.53	B	1.46	A	0.89	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	33	1091	345				871	32		225	88	3	52	218	28

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	44.7	17.6	14.3	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

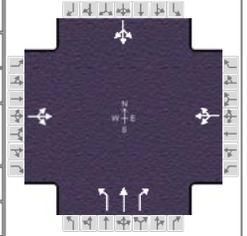
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		49.2		49.2		18.8		22.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						13.8		17.3
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.08		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1186	375		947	35	245	99			324	
Adjusted Saturation Flow Rate (s), veh/h/ln	602	1809	1610		1809	1610	1810	1889			1853	
Queue Service Time (g _s), s	3.9	22.1	13.8		16.1	1.0	11.8	4.2			15.3	
Cycle Queue Clearance Time (g _c), s	20.0	22.1	13.8		16.1	1.0	11.8	4.2			15.3	
Green Ratio (g/C)	0.50	0.50	0.50		0.50	0.50	0.16	0.16			0.20	
Capacity (c), veh/h	271	1795	799		1795	799	287	299			362	
Volume-to-Capacity Ratio (X)	0.132	0.661	0.469		0.527	0.044	0.853	0.330			0.895	
Back of Queue (Q), ft/ln (95 th percentile)	27.4	343.1	219.2		262.6	16.2	245.3	87.2			336.3	
Back of Queue (Q), veh/ln (95 th percentile)	1.1	13.7	8.8		10.5	0.6	9.8	3.5			13.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	22.3	17.0	14.9		15.5	11.7	36.8	33.6			35.3	
Incremental Delay (d ₂), s/veh	1.0	1.9	2.0		1.1	0.1	8.2	0.2			17.7	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	23.3	18.9	16.9		16.6	11.8	45.0	33.9			53.0	
Level of Service (LOS)	C	B	B		B	B	D	C			D	
Approach Delay, s/veh / LOS	18.5	B		16.4	B		41.8	D		53.0	D	
Intersection Delay, s/veh / LOS	23.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.80	B	1.30	A	1.05	A	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	412	56	61	278	8	49	293	153	21	275	68

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.3	25.7	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

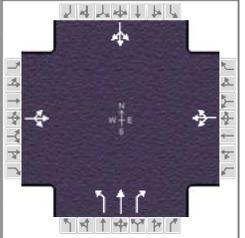
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		59.8		59.8		30.2		30.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						24.6		21.1
Green Extension Time (g _e), s		0.0		0.0		1.4		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						0.41		0.13

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	580			377			53	318	166	396		
Adjusted Saturation Flow Rate (s), veh/h/ln	1748			1639			1026	1900	1610	1743		
Queue Service Time (g _s), s	2.0			0.0			4.5	13.0	7.4	6.4		
Cycle Queue Clearance Time (g _c), s	15.8			8.6			22.6	13.0	7.4	19.1		
Green Ratio (g/C)	0.61			0.61			0.29	0.29	0.29	0.29		
Capacity (c), veh/h	1125			1059			164	536	454	534		
Volume-to-Capacity Ratio (X)	0.516			0.356			0.325	0.594	0.366	0.741		
Back of Queue (Q), ft/ln (95 th percentile)	255.1			158.1			51.6	244.6	126.8	324.9		
Back of Queue (Q), veh/ln (95 th percentile)	10.2			6.3			2.1	9.8	5.1	13.0		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	9.5			8.2			40.0	27.9	25.9	29.8		
Incremental Delay (d ₂), s/veh	1.7			0.9			0.4	0.4	0.2	2.9		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	11.2			9.1			40.4	28.2	26.0	32.7		
Level of Service (LOS)	B			A			D	C	C	C		
Approach Delay, s/veh / LOS	11.2	B		9.1	A		28.8	C		32.7	C	
Intersection Delay, s/veh / LOS	20.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.23	B	1.65	B	1.70	B	1.70	B
Bicycle LOS Score / LOS	1.45	A	1.11	A	1.38	A	1.14	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - PM	PHF	0.92
Urban Street	Otis / Santa Ana		Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #10		File Name	10PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	59	409	72	96	354	10	62	280	115	10	376	101

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

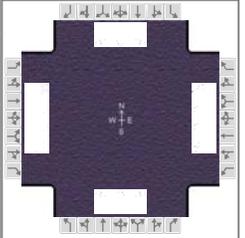
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.5		26.3
Green Extension Time (g _e), s		0.0		0.0		0.0		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.77

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	587			500			67	304	125	529		
Adjusted Saturation Flow Rate (s), veh/h/ln	1742			1555			897	1900	1610	1822		
Queue Service Time (g _s), s	0.8			0.0			6.2	11.3	5.0	5.4		
Cycle Queue Clearance Time (g _c), s	18.8			18.0			30.5	11.3	5.0	24.3		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1022			921			142	644	546	658		
Volume-to-Capacity Ratio (X)	0.575			0.543			0.475	0.473	0.229	0.804		
Back of Queue (Q), ft/ln (95 th percentile)	302.9			266.3			68.4	216	83.8	428.4		
Back of Queue (Q), veh/ln (95 th percentile)	12.1			10.7			2.7	8.6	3.4	17.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.7			12.2			42.2	23.4	21.3	27.7		
Incremental Delay (d ₂), s/veh	2.4			2.3			0.9	0.2	0.1	6.7		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	15.1			14.5			43.1	23.6	21.4	34.4		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	15.1	B		14.5	B		25.7	C		34.4	C	
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.46	A	1.31	A	1.31	A	1.36	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future with Project- AM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #1	File Name	01AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	31	1012	84	184	1135	167	172	470	309	114	233	74

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	3.4	1.6	29.3	7.7	0.8	24.7				
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	3.5	0.0	3.5				
				Red	1.0	1.0	1.0	1.0	0.0	1.0				

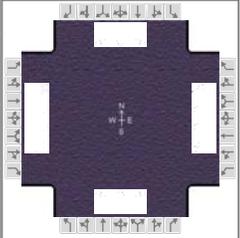
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	1	6	5	2	7	4	3	8
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	7.9	33.8	14.0	39.9	13.0	30.0	12.2	29.2
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g _s), s	3.6		11.5		10.5	25.7	8.1	12.0
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
Phase Call Probability	0.57		0.99		0.99	1.00	0.95	1.00
Max Out Probability	0.01		1.00		1.00	1.00	1.00	0.06

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	34	805	387	200	965	450	187	511	336	124	253	80
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1823	1810	1900	1771	1810	1900	1610	1810	1900	1610
Queue Service Time (g _s), s	1.6	16.3	16.3	9.5	18.6	18.6	8.5	23.7	17.0	6.1	10.0	3.4
Cycle Queue Clearance Time (g _c), s	1.6	16.3	16.3	9.5	18.6	18.6	8.5	23.7	17.0	6.1	10.0	3.4
Green Ratio (g/C)	0.04	0.33	0.33	0.11	0.39	0.39	0.09	0.28	0.28	0.09	0.27	0.27
Capacity (c), veh/h	69	1237	593	191	1494	697	171	538	456	155	521	442
Volume-to-Capacity Ratio (X)	0.491	0.650	0.651	1.047	0.646	0.646	1.094	0.949	0.736	0.801	0.486	0.182
Back of Queue (Q), ft/ln (95 th percentile)	34.1	299	304.5	329.9	324.5	321.6	335	511.8	282.4	157.8	201.6	59.3
Back of Queue (Q), veh/ln (95 th percentile)	1.4	12.0	12.2	13.2	13.0	12.9	13.4	20.5	11.3	6.3	8.1	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.4	26.0	26.0	40.3	22.2	22.2	40.8	31.6	29.2	40.4	27.3	24.9
Incremental Delay (d ₂), s/veh	2.0	2.7	5.5	78.1	2.2	4.6	96.2	26.3	5.4	19.1	0.3	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.4	28.6	31.5	118.3	24.4	26.8	136.9	57.9	34.6	59.5	27.6	25.0
Level of Service (LOS)	D	C	C	F	C	C	F	E	C	E	C	C
Approach Delay, s/veh / LOS	30.0		C	36.7		D	64.6		E	35.8		D
Intersection Delay, s/veh / LOS	41.4						D					

Multimodal Results	EB		WB		NB		SB	
	Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58
Bicycle LOS Score / LOS	1.16	A	1.38	A	2.19	B	1.24	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Salt Lake - California / F...	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersection #1	File Name	01PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	40	1118	159	190	864	93	136	262	234	129	418	75

Signal Information				Signal Phases										
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On											
Force Mode	Float	Simult. Gap N/S	On											
				Green	4.0	1.0	30.3	8.5	23.7	0.0				
				Yellow	3.5	3.5	3.5	3.5	3.5	0.0				
				Red	1.0	1.0	1.0	1.0	1.0	0.0				

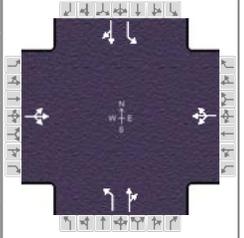
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	4.0	2.0	3.0	2.0	3.0
Phase Duration, s	8.5	34.8	14.0	40.3	13.0	28.2	13.0	28.2
Change Period, (Y+R _c), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Allow Headway (MAH), s	3.1	0.0	3.1	0.0	3.1	3.2	3.3	3.2
Queue Clearance Time (g _s), s	4.1		11.5		9.3	14.4	8.8	22.8
Green Extension Time (g _e), s	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.9
Phase Call Probability	0.66		0.99		0.98	1.00	0.97	1.00
Max Out Probability	0.02		1.00		1.00	0.09	1.00	1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	43	946	442	207	705	336	148	285	254	140	454	82
Adjusted Saturation Flow Rate (s), veh/h/ln	1810	1900	1775	1810	1900	1802	1810	1900	1610	1810	1900	1610
Queue Service Time (g _s), s	2.1	19.8	19.8	9.5	12.3	12.4	7.3	11.7	12.4	6.8	20.8	3.5
Cycle Queue Clearance Time (g _c), s	2.1	19.8	19.8	9.5	12.3	12.4	7.3	11.7	12.4	6.8	20.8	3.5
Green Ratio (g/C)	0.04	0.34	0.34	0.11	0.40	0.40	0.09	0.26	0.26	0.09	0.26	0.26
Capacity (c), veh/h	80	1279	598	191	1512	717	171	500	424	171	500	424
Volume-to-Capacity Ratio (X)	0.544	0.740	0.740	1.081	0.466	0.468	0.865	0.569	0.600	0.820	0.908	0.192
Back of Queue (Q), ft/ln (95 th percentile)	43.8	354	356.7	352.2	229.4	228.9	206.5	224	208.4	189.2	437.9	61.2
Back of Queue (Q), veh/ln (95 th percentile)	1.8	14.2	14.3	14.1	9.2	9.2	8.3	9.0	8.3	7.6	17.5	2.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d ₁), s/veh	42.1	26.4	26.4	40.3	20.0	20.0	40.2	28.7	29.0	40.0	32.1	25.7
Incremental Delay (d ₂), s/veh	2.1	3.9	8.0	88.4	1.0	2.2	32.9	0.6	1.2	24.7	17.7	0.1
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	44.3	30.2	34.4	128.7	21.1	22.2	73.1	29.4	30.2	64.7	49.8	25.8
Level of Service (LOS)	D	C	C	F	C	C	E	C	C	E	D	C
Approach Delay, s/veh / LOS	31.9	C		39.2	D		39.1	D		50.0	D	
Intersection Delay, s/veh / LOS	38.4						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	2.27	B	2.58	C	2.58	C
Bicycle LOS Score / LOS	1.27	A	1.17	A	1.62	B	1.60	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #2	File Name	02AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	69	41	27	19	31	38	28	662	9	17	426	51

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	70.3	10.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

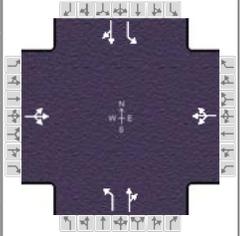
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		15.2		15.2		74.8		74.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		10.2		6.6				
Green Extension Time (g _e), s		0.4		0.5		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	149			96			30	729		18	518	
Adjusted Saturation Flow Rate (s), veh/h/ln	1572			1725			897	1895		738	1864	
Queue Service Time (g _s), s	3.7			0.0			1.0	12.3		0.8	7.6	
Cycle Queue Clearance Time (g _c), s	8.2			4.6			8.5	12.3		13.1	7.6	
Green Ratio (g/C)	0.12			0.12			0.78	0.78		0.78	0.78	
Capacity (c), veh/h	246			253			705	1481		555	1457	
Volume-to-Capacity Ratio (X)	0.604			0.378			0.043	0.492		0.033	0.356	
Back of Queue (Q), ft/ln (95 th percentile)	145.9			89.3			7.3	147.5		5.7	88.2	
Back of Queue (Q), veh/ln (95 th percentile)	5.8			3.6			0.3	5.9		0.2	3.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	38.5			37.0			4.3	3.5		5.8	3.0	
Incremental Delay (d ₂), s/veh	0.9			0.3			0.1	1.2		0.1	0.7	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	39.4			37.3			4.4	4.7		5.9	3.7	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	39.4		D	37.3		D	4.7		A	3.7		A
Intersection Delay, s/veh / LOS	9.7						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.60	B	1.60	B
Bicycle LOS Score / LOS	0.73	A	0.65	A	1.74	B	1.37	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California / Hope	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #2	File Name	02PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	28	19	26	4	23	15	21	481	5	17	624	23

Signal Information				EB				WB				NB				SB			
Cycle, s	90.0	Reference Phase	2	Green	74.6	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On																

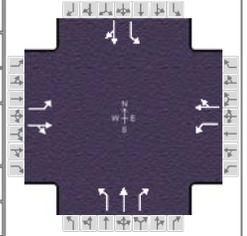
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		8.0		8.0		6.0		6.0
Phase Duration, s		10.9		10.9		79.1		79.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		6.2		4.2				
Green Extension Time (g _e), s		0.2		0.2		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		0.00		0.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	79			46			23	528		18	703	
Adjusted Saturation Flow Rate (s), veh/h/ln	1627			1773			756	1896		889	1888	
Queue Service Time (g _s), s	2.0			0.0			0.8	6.0		0.5	9.2	
Cycle Queue Clearance Time (g _c), s	4.2			2.2			9.9	6.0		6.4	9.2	
Green Ratio (g/C)	0.07			0.07			0.83	0.83		0.83	0.83	
Capacity (c), veh/h	171			170			629	1572		758	1564	
Volume-to-Capacity Ratio (X)	0.463			0.268			0.036	0.336		0.024	0.450	
Back of Queue (Q), ft/ln (95 th percentile)	78.6			44			4.8	50.3		3	78.1	
Back of Queue (Q), veh/ln (95 th percentile)	3.1			1.8			0.2	2.0		0.1	3.1	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	40.7			39.8			3.5	1.8		2.6	2.1	
Incremental Delay (d ₂), s/veh	0.7			0.3			0.1	0.6		0.1	0.9	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	41.4			40.1			3.6	2.4		2.7	3.0	
Level of Service (LOS)	D			D			A	A		A	A	
Approach Delay, s/veh / LOS	41.4	D		40.1	D		2.5	A		3.0	A	
Intersection Delay, s/veh / LOS	6.2						A					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.94	B	1.94	B	1.58	B	1.58	B
Bicycle LOS Score / LOS	0.62	A	0.56	A	1.40	A	1.68	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #3	File Name	03AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	401	60	68	378	61	119	526	83	69	414	51

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0

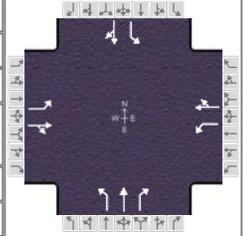
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	51	501		74	477		129	572	90	75	505	
Adjusted Saturation Flow Rate (s), veh/h/ln	932	1857		911	1854		908	1900	1610	854	1863	
Queue Service Time (g _s), s	3.1	23.8		1.7	22.4		7.9	14.9	2.0	4.8	12.8	
Cycle Queue Clearance Time (g _c), s	25.5	23.8		25.5	22.4		20.7	14.9	2.0	19.6	12.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	113	526		97	525		510	1172	993	466	1149	
Volume-to-Capacity Ratio (X)	0.454	0.953		0.764	0.909		0.253	0.488	0.091	0.161	0.440	
Back of Queue (Q), ft/ln (95 th percentile)	52.3	513.3		106.3	456.3		75.8	242.5	30	43.5	212.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.1	20.5		4.3	18.3		3.0	9.7	1.2	1.7	8.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	44.0	31.7		44.8	31.1		14.5	9.5	7.0	14.8	9.1	
Incremental Delay (d ₂), s/veh	1.1	27.4		27.1	19.3		1.2	1.5	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	45.1	59.1		71.9	50.4		15.7	10.9	7.2	15.6	10.3	
Level of Service (LOS)	D	E		E	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	57.8	E		53.3	D		11.3	B		11.0	B	
Intersection Delay, s/veh / LOS	30.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.40	A	1.40	A	1.79	B	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #3	File Name	03PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	437	105	55	342	59	116	436	84	80	517	62

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

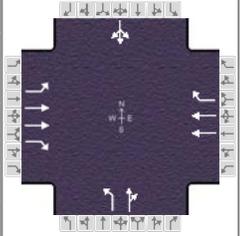
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	74	589		60	436		126	474	91	87	629	
Adjusted Saturation Flow Rate (s), veh/h/ln	968	1836		840	1851		809	1900	1610	935	1864	
Queue Service Time (g _s), s	5.6	25.5		0.0	19.9		9.6	11.5	2.1	4.7	17.6	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.9		27.2	11.5	2.1	16.2	17.6	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	141	520		80	524		421	1172	993	537	1150	
Volume-to-Capacity Ratio (X)	0.526	1.132		0.747	0.831		0.300	0.404	0.092	0.162	0.547	
Back of Queue (Q), ft/ln (95 th percentile)	76.6	819.9		87.9	381.4		85.8	196.7	30.5	46	274.8	
Back of Queue (Q), veh/ln (95 th percentile)	3.1	32.8		3.5	15.3		3.4	7.9	1.2	1.8	11.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	42.7	32.3		45.0	30.2		17.9	8.8	7.0	12.9	10.0	
Incremental Delay (d ₂), s/veh	1.8	81.3		28.5	10.3		1.8	1.0	0.2	0.6	1.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	44.5	113.6		73.5	40.5		19.7	9.8	7.2	13.6	11.9	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	105.9	F		44.5	D		11.3	B		12.1	B	
Intersection Delay, s/veh / LOS	42.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.58	B	1.31	A	1.63	B	1.67	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #6	File Name	06AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	56	1123	210				1042	122		415	185	4	64	133	45

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	41.0	15.0	20.5	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

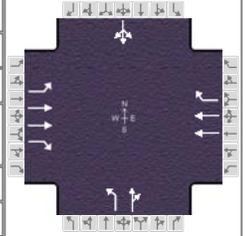
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		45.5		45.5		25.0		19.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						22.5		14.7
Green Extension Time (g _e), s		0.0		0.0		0.0		0.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.12

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	61	1221	228		1133	133	451	205			263	
Adjusted Saturation Flow Rate (s), veh/h/ln	505	1809	1610		1809	1610	1810	1893			1815	
Queue Service Time (g _s), s	9.8	24.9	8.1		22.3	4.4	20.5	8.5			12.7	
Cycle Queue Clearance Time (g _c), s	32.1	24.9	8.1		22.3	4.4	20.5	8.5			12.7	
Green Ratio (g/C)	0.46	0.46	0.46		0.46	0.46	0.23	0.23			0.17	
Capacity (c), veh/h	185	1648	734		1648	734	412	431			302	
Volume-to-Capacity Ratio (X)	0.329	0.741	0.311		0.687	0.181	1.094	0.476			0.870	
Back of Queue (Q), ft/ln (95 th percentile)	62.9	390.9	135.7		354.1	73.1	629	173.9			267.9	
Back of Queue (Q), veh/ln (95 th percentile)	2.5	15.6	5.4		14.2	2.9	25.2	7.0			10.7	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	32.1	20.1	15.5		19.4	14.5	34.8	30.1			36.6	
Incremental Delay (d ₂), s/veh	4.7	3.0	1.1		2.4	0.5	72.3	0.3			11.1	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	36.9	23.2	16.6		21.8	15.1	107.0	30.4			47.6	
Level of Service (LOS)	D	C	B		C	B	F	C			D	
Approach Delay, s/veh / LOS	22.7	C		21.1	C		83.0	F		47.6	D	
Intersection Delay, s/veh / LOS	34.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.68	B	2.31	B	2.44	B
Bicycle LOS Score / LOS	1.73	B	1.53	B	1.57	B	0.92	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Bell / City of Huntington Park	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California - Salt Lake / F...	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersection #6	File Name	06PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB					
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R			
Demand (v), veh/h	33	1104	345				871	32		236	92	3	52	222	28

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	43.9	17.8	14.8	0.0	0.0	0.0	1		2		3		4	
Force Mode	Float	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0								

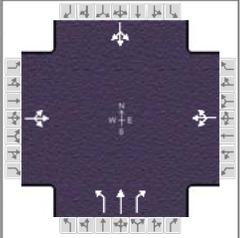
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		5.0		7.0		10.0		12.0
Phase Duration, s		48.4		48.4		19.3		22.3
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g _s), s						14.4		17.5
Green Extension Time (g _e), s		0.0		0.0		0.4		0.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.13		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12		6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	36	1200	375		947	35	257	103			328	
Adjusted Saturation Flow Rate (s), veh/h/ln	602	1809	1610		1809	1610	1810	1889			1853	
Queue Service Time (g _s), s	4.0	22.9	14.0		16.3	1.0	12.4	4.3			15.5	
Cycle Queue Clearance Time (g _c), s	20.3	22.9	14.0		16.3	1.0	12.4	4.3			15.5	
Green Ratio (g/C)	0.49	0.49	0.49		0.49	0.49	0.16	0.16			0.20	
Capacity (c), veh/h	264	1764	785		1764	785	298	312			366	
Volume-to-Capacity Ratio (X)	0.136	0.680	0.478		0.537	0.044	0.860	0.331			0.897	
Back of Queue (Q), ft/ln (95 th percentile)	28	355.7	223.6		267.7	16.6	258.9	90.3			341.2	
Back of Queue (Q), veh/ln (95 th percentile)	1.1	14.2	8.9		10.7	0.7	10.4	3.6			13.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00	0.00		0.00	0.00	0.00	0.00			0.00	
Uniform Delay (d ₁), s/veh	23.1	17.7	15.4		16.0	12.1	36.6	33.2			35.2	
Incremental Delay (d ₂), s/veh	1.1	2.1	2.1		1.2	0.1	9.8	0.2			18.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0			0.0	
Control Delay (d), s/veh	24.1	19.8	17.5		17.2	12.2	46.3	33.4			53.4	
Level of Service (LOS)	C	B	B		B	B	D	C			D	
Approach Delay, s/veh / LOS	19.4	B		17.0	B		42.6	D		53.4	D	
Intersection Delay, s/veh / LOS	24.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	1.90	B	1.67	B	2.31	B	2.45	B
Bicycle LOS Score / LOS	1.82	B	1.30	A	1.08	A	1.03	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	114	412	56	61	278	8	49	334	153	21	312	111

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	51.4	29.6	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.9		55.9		34.1		34.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						29.2		24.4
Green Extension Time (g _e), s		0.0		0.0		0.5		1.6
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.44

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	633			377			53	363	166	483		
Adjusted Saturation Flow Rate (s), veh/h/ln	1665			1602			947	1900	1610	1778		
Queue Service Time (g _s), s	13.0			0.0			4.9	14.3	7.0	8.1		
Cycle Queue Clearance Time (g _c), s	22.7			9.7			27.2	14.3	7.0	22.4		
Green Ratio (g/C)	0.57			0.57			0.33	0.33	0.33	0.33		
Capacity (c), veh/h	999			963			157	624	529	626		
Volume-to-Capacity Ratio (X)	0.633			0.392			0.339	0.581	0.314	0.771		
Back of Queue (Q), ft/ln (95 th percentile)	336.3			185.1			51.9	263	116.8	385.7		
Back of Queue (Q), veh/ln (95 th percentile)	13.5			7.4			2.1	10.5	4.7	15.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.9			10.3			40.2	25.1	22.6	27.7		
Incremental Delay (d ₂), s/veh	3.1			1.2			0.5	0.8	0.1	5.0		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	16.0			11.5			40.7	25.9	22.7	32.6		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	16.0	B		11.5	B		26.3	C		32.6	C	
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.53	B	1.11	A	1.45	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #10	File Name	10PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	71	409	72	96	354	10	62	290	115	10	385	111

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.5		27.7
Green Extension Time (g _e), s		0.0		0.0		0.0		0.9
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	600			500			67	315	125	550		
Adjusted Saturation Flow Rate (s), veh/h/ln	1717			1544			880	1900	1610	1818		
Queue Service Time (g _s), s	1.6			0.0			4.8	11.8	5.0	6.9		
Cycle Queue Clearance Time (g _c), s	19.9			18.3			30.5	11.8	5.0	25.7		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1009			915			126	644	546	657		
Volume-to-Capacity Ratio (X)	0.595			0.547			0.533	0.490	0.229	0.837		
Back of Queue (Q), ft/ln (95 th percentile)	314.6			267.5			70.5	223.1	83.7	458.5		
Back of Queue (Q), veh/ln (95 th percentile)	12.6			10.7			2.8	8.9	3.3	18.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.9			12.2			43.4	23.6	21.3	28.1		
Incremental Delay (d ₂), s/veh	2.6			2.3			2.3	0.2	0.1	8.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	15.5			14.6			45.6	23.8	21.4	37.0		
Level of Service (LOS)	B			B			D	C	C	D		
Approach Delay, s/veh / LOS	15.5	B		14.6	B		26.1	C		37.0	D	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.48	A	1.31	A	1.33	A	1.40	A

APPENDIX E

HCM AND LEVELS OF SERVICE EXPLANATION HCM DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS CITY OF SOUTH GATE

LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS

In the *Highway Capacity Manual (HCM)*, published by the Transportation Research Board, 2000, level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of incidents, and when there are no other vehicles on the road. Only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Level of Service criteria for traffic signals are stated in terms of the average control delay per vehicle. Delay is a complex measure and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service Criteria for Signalized Intersections	
Level of Service	Control Delay (Sec/Veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of Service (LOS) values are used to describe intersection operations with service levels varying from LOS A (free flow) to LOS F (jammed condition). The following descriptions summarize *HCM* criteria for each level of service:

LOS A describes operations with very low control delay, up to 10 seconds per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay values.

LOS B describes operations with control delay greater than 10 and up to 20 seconds per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

LOS C describes operations with control delay greater than 20 and up to 35 seconds per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

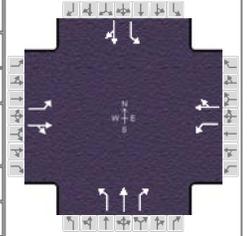
LOS D describes operations with control delay greater than 35 and up to 55 seconds per vehicle. At LOS D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

LOS E describes operations with control delay greater than 55 and up to 80 seconds per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

LOS F describes operations with control delay in excess of 80 seconds per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing - AM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #3	File Name	03AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	45	371	59	55	347	60	117	514	70	68	403	50

Signal Information				Signal Timing (s)								Signal Phases				
Cycle, s	90.0	Reference Phase	2	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On													

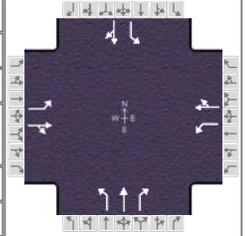
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		26.8		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	49	467		60	442		127	559	76	74	492	
Adjusted Saturation Flow Rate (s), veh/h/ln	962	1854		940	1851		919	1900	1610	864	1863	
Queue Service Time (g _s), s	4.5	21.7		3.8	20.3		7.5	14.4	1.7	4.6	12.4	
Cycle Queue Clearance Time (g _c), s	24.8	21.7		25.5	20.3		19.9	14.4	1.7	18.9	12.4	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	136	525		119	524		520	1172	993	475	1149	
Volume-to-Capacity Ratio (X)	0.360	0.890		0.501	0.844		0.245	0.477	0.077	0.156	0.429	
Back of Queue (Q), ft/ln (95 th percentile)	48.9	435.8		61.3	391.6		73.1	236.2	25.1	42.2	206.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.0	17.4		2.5	15.7		2.9	9.4	1.0	1.7	8.2	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	42.0	30.9		43.8	30.4		14.2	9.4	6.9	14.5	9.0	
Incremental Delay (d ₂), s/veh	0.6	16.5		1.2	11.4		1.1	1.4	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	42.6	47.4		45.0	41.7		15.3	10.8	7.1	15.2	10.2	
Level of Service (LOS)	D	D		D	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	47.0		D	42.1		D	11.1		B	10.8		B
Intersection Delay, s/veh / LOS	25.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.34	A	1.32	A	1.74	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Existing - PM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #3		File Name	03PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	416	103	47	325	58	114	424	74	78	502	60

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.5	25.5	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

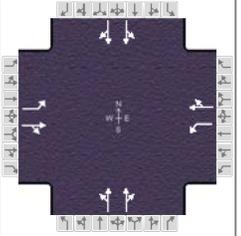
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	72	564		51	416		124	461	80	85	611	
Adjusted Saturation Flow Rate (s), veh/h/ln	985	1834		860	1850		823	1900	1610	946	1864	
Queue Service Time (g _s), s	6.5	25.5		0.0	18.7		9.1	11.0	1.8	4.5	16.8	
Cycle Queue Clearance Time (g _c), s	25.3	25.5		25.5	18.7		25.9	11.0	1.8	15.5	16.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	154	520		80	524		434	1172	993	547	1150	
Volume-to-Capacity Ratio (X)	0.466	1.085		0.639	0.794		0.286	0.393	0.081	0.155	0.531	
Back of Queue (Q), ft/ln (95 th percentile)	72.1	724.9		63.1	353.8		82.2	191.3	26.7	44.1	266	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	29.0		2.5	14.2		3.3	7.7	1.1	1.8	10.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	41.5	32.2		45.0	29.8		17.2	8.7	7.0	12.7	9.8	
Incremental Delay (d ₂), s/veh	0.8	64.6		12.4	7.6		1.6	1.0	0.2	0.6	1.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	42.3	96.8		57.4	37.4		18.9	9.7	7.1	13.3	11.6	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	90.7	F		39.6	D		11.1	B		11.8	B	
Intersection Delay, s/veh / LOS	37.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.54	B	1.26	A	1.59	B	1.64	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing - AM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #4	File Name	04AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	151	72	69	157	37	109	593	27	22	554	18

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	35.3	22.5	18.7	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

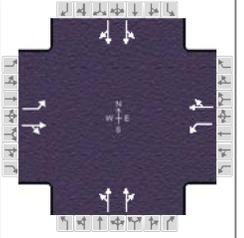
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		39.8		39.8		27.0		23.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g _s), s						21.2		17.6
Green Extension Time (g _e), s		0.0		0.0		1.2		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.07		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	28	242		75	211		415		378	339		306
Adjusted Saturation Flow Rate (s), veh/h/ln	1189	1796		1156	1837		1873		1874	1893		1878
Queue Service Time (g _s), s	1.5	8.5		4.4	7.1		19.2		17.0	15.6		13.9
Cycle Queue Clearance Time (g _c), s	8.6	8.5		12.9	7.1		19.2		17.0	15.6		13.9
Green Ratio (g/C)	0.39	0.39		0.39	0.39		0.25		0.25	0.21		0.21
Capacity (c), veh/h	453	705		424	721		467		467	394		391
Volume-to-Capacity Ratio (X)	0.062	0.344		0.177	0.292		0.888		0.808	0.862		0.785
Back of Queue (Q), ft/ln (95 th percentile)	19.8	163.8		56.9	138.7		365.5		313.3	288		259
Back of Queue (Q), veh/ln (95 th percentile)	0.8	6.6		2.3	5.5		14.6		12.5	11.5		10.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	21.7	19.2		23.7	18.8		32.6		31.7	34.4		33.7
Incremental Delay (d ₂), s/veh	0.3	1.3		0.9	1.0		9.3		3.9	2.2		1.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	22.0	20.5		24.6	19.8		41.9		35.7	36.6		35.1
Level of Service (LOS)	C	C		C	B		D		D	D		D
Approach Delay, s/veh / LOS	20.7	C		21.1	C		38.9	D		35.9	D	
Intersection Delay, s/veh / LOS	32.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.93	B	1.95	B
Bicycle LOS Score / LOS	0.93	A	0.96	A	1.14	A	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing - PM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #4	File Name	04PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	26	141	34	30	118	33	51	514	30	9	572	12

Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	39.1	18.6	18.8	0.0	0.0	0.0				
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
		Red	1.0	1.0	1.0	0.0	0.0	0.0				

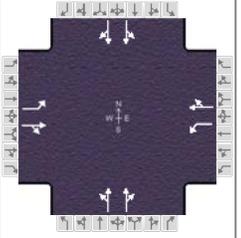
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		43.6		43.6		23.3		23.1
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g_s), s						17.7		17.5
Green Extension Time (g_e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	28	190		33	164		340		307	338		306
Adjusted Saturation Flow Rate (s), veh/h/ln	1241	1836		1212	1828		1885		1864	1897		1886
Queue Service Time (g_s), s	1.3	5.9		1.6	5.0		15.7		14.0	15.5		13.9
Cycle Queue Clearance Time (g_c), s	6.3	5.9		7.5	5.0		15.7		14.0	15.5		13.9
Green Ratio (g/C)	0.43	0.43		0.43	0.43		0.21		0.21	0.21		0.21
Capacity (c), veh/h	550	797		527	794		395		390	391		389
Volume-to-Capacity Ratio (X)	0.051	0.239		0.062	0.207		0.862		0.785	0.865		0.787
Back of Queue (Q), ft/ln (95 th percentile)	17.4	112.6		20.6	95.5		288.6		259.1	292.5		259.2
Back of Queue (Q), veh/ln (95 th percentile)	0.7	4.5		0.8	3.8		11.5		10.4	11.7		10.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	17.8	16.1		18.4	15.8		34.3		33.7	34.5		33.8
Incremental Delay (d_2), s/veh	0.2	0.7		0.2	0.6		2.2		1.3	3.6		1.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	18.0	16.8		18.6	16.4		36.5		35.0	38.1		35.2
Level of Service (LOS)	B	B		B	B		D		C	D		D
Approach Delay, s/veh / LOS	16.9		B	16.8		B	35.8		D	36.7		D
Intersection Delay, s/veh / LOS	31.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	0.85	A	0.81	A	1.02	A	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - AM	PHF	0.92		
Urban Street	California / Ardmore	Analysis Year	2019	Analysis Period	1 > 7:15		
Intersection	Intersection #5	File Name	05AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	70	229	111	42	138	43	36	655	19	39	533	75

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	34.2	20.4	22.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

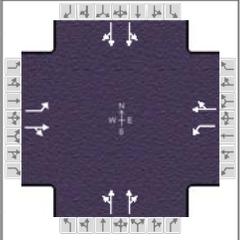
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		38.7		38.7		26.5		24.9
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.1
Queue Clearance Time (g_s), s						20.5		19.2
Green Extension Time (g_e), s		0.0		0.0		1.4		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	76	370		46	197		405		367	374		329
Adjusted Saturation Flow Rate (s), veh/h/ln	1205	1795		1029	1822		1891		1881	1889		1819
Queue Service Time (g_s), s	4.2	14.5		3.3	6.8		18.5		16.5	17.2		15.4
Cycle Queue Clearance Time (g_c), s	11.0	14.5		17.7	6.8		18.5		16.5	17.2		15.4
Green Ratio (g/C)	0.38	0.38		0.38	0.38		0.24		0.24	0.23		0.23
Capacity (c), veh/h	447	681		305	692		461		459	428		412
Volume-to-Capacity Ratio (X)	0.170	0.542		0.150	0.284		0.878		0.799	0.876		0.799
Back of Queue (Q), ft/ln (95 th percentile)	56.7	262.2		39.3	132.1		329.6		294.9	326.5		276.9
Back of Queue (Q), veh/ln (95 th percentile)	2.3	10.5		1.6	5.3		13.2		11.8	13.1		11.1
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	23.2	21.8		28.7	19.4		32.7		31.9	33.6		32.9
Incremental Delay (d_2), s/veh	0.8	3.1		1.0	1.0		2.2		1.2	6.3		2.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	24.1	24.9		29.8	20.4		34.9		33.2	39.9		35.3
Level of Service (LOS)	C	C		C	C		C		C	D		D
Approach Delay, s/veh / LOS	24.7	C		22.2	C		34.1	C		37.7	D	
Intersection Delay, s/veh / LOS	32.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.22	A	0.89	A	1.12	A	1.07	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Dec 2, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - PM	PHF	0.92		
Urban Street	California / Ardmore	Analysis Year	2019	Analysis Period	1 > 17:00		
Intersection	Intersection #5	File Name	05PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	29	206	91	15	98	20	22	552	33	46	555	34

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	37.5	19.9	19.1	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

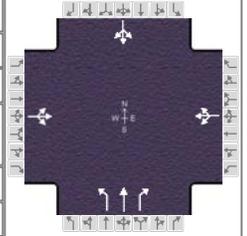
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		42.0		42.0		23.6		24.4
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.1
Queue Clearance Time (g_s), s						18.0		18.7
Green Extension Time (g_e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	323		16	128		348		312	363		327
Adjusted Saturation Flow Rate (s), veh/h/ln	1282	1801		1074	1844		1893		1861	1887		1862
Queue Service Time (g_s), s	1.4	11.5		1.0	3.9		16.0		14.3	16.7		14.9
Cycle Queue Clearance Time (g_c), s	5.4	11.5		12.5	3.9		16.0		14.3	16.7		14.9
Green Ratio (g/C)	0.42	0.42		0.42	0.42		0.21		0.21	0.22		0.22
Capacity (c), veh/h	558	750		390	768		403		396	417		411
Volume-to-Capacity Ratio (X)	0.056	0.430		0.042	0.167		0.864		0.787	0.873		0.795
Back of Queue (Q), ft/ln (95 th percentile)	19.6	213.1		11.9	75.7		293.6		262.3	316.4		273.8
Back of Queue (Q), veh/ln (95 th percentile)	0.8	8.5		0.5	3.0		11.7		10.5	12.7		11.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	18.1	18.7		23.1	16.5		34.2		33.5	33.8		33.1
Incremental Delay (d_2), s/veh	0.2	1.8		0.2	0.5		2.2		1.3	5.6		1.9
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	18.3	20.5		23.3	16.9		36.4		34.8	39.4		35.0
Level of Service (LOS)	B	C		C	B		D		C	D		D
Approach Delay, s/veh / LOS	20.3	C		17.7	B		35.6	D		37.3	D	
Intersection Delay, s/veh / LOS	31.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.07	A	0.73	A	1.03	A	1.06	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	63	400	55	59	271	8	48	280	150	21	262	59

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	56.7	24.3	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

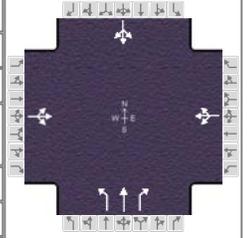
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		61.2		61.2		28.8		28.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						23.2		20.2
Green Extension Time (g _e), s		0.0		0.0		1.4		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						0.24		0.08

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	563			367			52	304	163	372		
Adjusted Saturation Flow Rate (s), veh/h/ln	1751			1644			1048	1900	1610	1731		
Queue Service Time (g _s), s	0.3			0.0			4.3	12.6	7.4	6.1		
Cycle Queue Clearance Time (g _c), s	14.3			8.0			21.2	12.6	7.4	18.2		
Green Ratio (g/C)	0.63			0.63			0.27	0.27	0.27	0.27		
Capacity (c), veh/h	1152			1087			164	508	431	506		
Volume-to-Capacity Ratio (X)	0.489			0.338			0.318	0.599	0.378	0.735		
Back of Queue (Q), ft/ln (95 th percentile)	235.6			145.1			50.5	238.9	127	308.4		
Back of Queue (Q), veh/ln (95 th percentile)	9.4			5.8			2.0	9.6	5.1	12.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	8.7			7.5			40.1	28.7	26.9	30.6		
Incremental Delay (d ₂), s/veh	1.5			0.8			0.4	0.4	0.2	2.4		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	10.2			8.4			40.5	29.2	27.1	32.9		
Level of Service (LOS)	B			A			D	C	C	C		
Approach Delay, s/veh / LOS	10.2	B		8.4	A		29.6	C		32.9	C	
Intersection Delay, s/veh / LOS	20.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.23	B	1.65	B	1.70	B	1.70	B
Bicycle LOS Score / LOS	1.42	A	1.09	A	1.34	A	1.10	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Existing - PM	PHF	0.92
Urban Street	Otis / Santa Ana		Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #10		File Name	10PM - Existing.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	56	390	71	93	345	10	61	264	112	10	358	89

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

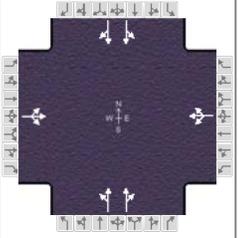
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						30.5		24.2
Green Extension Time (g _e), s		0.0		0.0		0.0		1.5
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.38

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	562			487			66	287	122	497		
Adjusted Saturation Flow Rate (s), veh/h/ln	1744			1579			924	1900	1610	1825		
Queue Service Time (g _s), s	1.0			0.0			6.3	10.6	4.9	3.3		
Cycle Queue Clearance Time (g _c), s	17.5			16.5			28.5	10.6	4.9	22.2		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1023			935			166	643	545	659		
Volume-to-Capacity Ratio (X)	0.549			0.521			0.400	0.446	0.223	0.754		
Back of Queue (Q), ft/ln (95 th percentile)	287.1			255.5			64.9	204.6	81.5	387.7		
Back of Queue (Q), veh/ln (95 th percentile)	11.5			10.2			2.6	8.2	3.3	15.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.4			11.9			39.9	23.2	21.3	27.0		
Incremental Delay (d ₂), s/veh	2.1			2.1			0.6	0.2	0.1	4.4		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.6			14.0			40.5	23.4	21.4	31.4		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.6	B		14.0	B		25.2	C		31.4	C	
Intersection Delay, s/veh / LOS	21.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.41	A	1.29	A	1.27	A	1.31	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - AM	PHF	0.92		
Urban Street	Otis / Independence	Analysis Year	2019	Analysis Period	1 > 7:15		
Intersection	Intersection #11	File Name	11AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	32	102	111	33	28	9	107	513	84	40	445	31

Signal Information				Phase Diagram								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	37.6	16.6	22.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

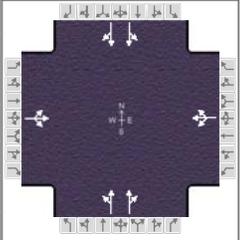
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		42.1		42.1		26.8		21.1
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						20.7		15.6
Green Extension Time (g_e), s		0.0		0.0		1.5		1.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	266			76			406			295		
Adjusted Saturation Flow Rate (s), veh/h/ln	1707			1449			1873			1817		
Queue Service Time (g_s), s	0.0			0.0			18.7			16.7		
Cycle Queue Clearance Time (g_c), s	9.4			2.2			18.7			16.7		
Green Ratio (g/C)	0.42			0.42			0.25			0.25		
Capacity (c), veh/h	758			664			464			348		
Volume-to-Capacity Ratio (X)	0.351			0.115			0.876			0.798		
Back of Queue (Q), ft/ln (95 th percentile)	173.9			45.4			333			292.8		
Back of Queue (Q), veh/ln (95 th percentile)	7.0			1.8			13.3			11.7		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d_1), s/veh	18.0			15.9			32.5			31.7		
Incremental Delay (d_2), s/veh	1.3			0.4			2.1			1.2		
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	19.3			16.3			34.6			33.0		
Level of Service (LOS)	B			B			C			C		
Approach Delay, s/veh / LOS	19.3	B		16.3	B		33.9	C		37.1	D	
Intersection Delay, s/veh / LOS	31.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	0.93	A	0.61	A	1.12	A	0.95	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - PM	PHF	0.92		
Urban Street	Otis / Independence	Analysis Year	2019	Analysis Period	1 > 16:45		
Intersection	Intersection #11	File Name	11PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	23	50	64	53	57	16	122	474	48	19	505	28

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green		38.5	20.3	17.6	0.0	0.0	0.0				
		Yellow		3.5	3.5	3.5	0.0	0.0	0.0				
		Red		1.0	1.0	1.0	0.0	0.0	0.0				

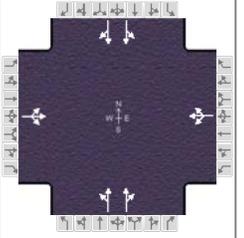
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		43.0		43.0		24.8		22.1
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						19.1		16.5
Green Extension Time (g_e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.02		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	149			137			368			316		
Adjusted Saturation Flow Rate (s), veh/h/ln	1673			1577			1866			1894		
Queue Service Time (g_s), s	0.0			0.0			17.1			15.3		
Cycle Queue Clearance Time (g_c), s	4.8			4.4			17.1			15.3		
Green Ratio (g/C)	0.43			0.43			0.23			0.23		
Capacity (c), veh/h	763			732			422			371		
Volume-to-Capacity Ratio (X)	0.195			0.187			0.873			0.795		
Back of Queue (Q), ft/ln (95 th percentile)	87.4			82.7			324.5			275.5		
Back of Queue (Q), veh/ln (95 th percentile)	3.5			3.3			13.0			11.0		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d_1), s/veh	16.1			15.9			33.6			32.9		
Incremental Delay (d_2), s/veh	0.6			0.6			6.1			2.2		
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	16.7			16.5			39.7			35.1		
Level of Service (LOS)	B			B			D			D		
Approach Delay, s/veh / LOS	16.7	B		16.5	B		37.5	D		36.4	D	
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.71	B	1.73	B
Bicycle LOS Score / LOS	0.73	A	0.71	A	1.07	A	0.98	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - AM	PHF	0.92		
Urban Street	Otis / Ardmore	Analysis Year	2019	Analysis Period	1 > 7:00		
Intersection	Intersection #12	File Name	12AM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	91	5	275	3	2	1	80	608	5	2	529	53

Signal Information				Phase Diagram							
Cycle, s	90.0	Reference Phase	2	1	2	3	4	5	6	7	8
Offset, s	0	Reference Point	End	Green	36.4	18.5	21.6	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0

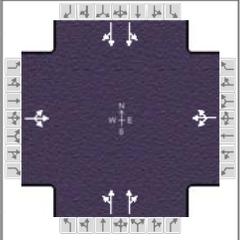
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		40.9		40.9		26.1		23.0
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						20.1		17.4
Green Extension Time (g_e), s		0.0		0.0		1.5		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	403			7			393			360		
Adjusted Saturation Flow Rate (s), veh/h/ln	1585			1214			1879			1895		
Queue Service Time (g_s), s	12.0			0.0			18.1			16.1		
Cycle Queue Clearance Time (g_c), s	18.0			0.2			18.1			16.1		
Green Ratio (g/C)	0.40			0.40			0.24			0.24		
Capacity (c), veh/h	691			551			450			454		
Volume-to-Capacity Ratio (X)	0.584			0.012			0.873			0.794		
Back of Queue (Q), ft/ln (95 th percentile)	284			4			324.9			294.3		
Back of Queue (Q), veh/ln (95 th percentile)	11.4			0.2			13.0			11.8		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d_1), s/veh	21.2			16.0			32.9			32.1		
Incremental Delay (d_2), s/veh	3.6			0.0			2.1			1.2		
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	24.8			16.0			35.0			33.4		
Level of Service (LOS)	C			B			D			C		
Approach Delay, s/veh / LOS	24.8	C		16.0	B		34.2	C		36.6	D	
Intersection Delay, s/veh / LOS	32.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.15	A	0.50	A	1.11	A	1.01	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Nov 22, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Existing - PM	PHF	0.92		
Urban Street	Otis / Ardmore	Analysis Year	2019	Analysis Period	1 > 16:30		
Intersection	Intersection #12	File Name	12PM - Existing.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	65	2	261	4	2	1	60	576	1	1	585	36

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	37.1	19.5	19.9	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

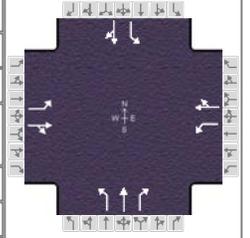
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		41.6		41.6		24.4		24.0
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						18.6		18.3
Green Extension Time (g_e), s		0.0		0.0		1.3		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	357			8			361			331		
Adjusted Saturation Flow Rate (s), veh/h/ln	1593			1203			1883			1899		
Queue Service Time (g_s), s	7.0			0.0			16.6			14.8		
Cycle Queue Clearance Time (g_c), s	14.9			0.2			16.6			14.8		
Green Ratio (g/C)	0.41			0.41			0.22			0.22		
Capacity (c), veh/h	704			558			417			421		
Volume-to-Capacity Ratio (X)	0.507			0.014			0.866			0.787		
Back of Queue (Q), ft/ln (95 th percentile)	243.6			4.6			304.8			276.9		
Back of Queue (Q), veh/ln (95 th percentile)	9.7			0.2			12.2			11.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d_1), s/veh	19.9			15.6			33.7			33.0		
Incremental Delay (d_2), s/veh	2.6			0.0			2.2			1.3		
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	22.5			15.7			35.9			34.3		
Level of Service (LOS)	C			B			D			C		
Approach Delay, s/veh / LOS	22.5	C		15.7	B		35.1	D		37.0	D	
Intersection Delay, s/veh / LOS	33.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.08	A	0.50	A	1.06	A	1.05	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersecion #3	File Name	03AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	45	392	59	64	365	60	117	514	80	68	403	50

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.5	25.5	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

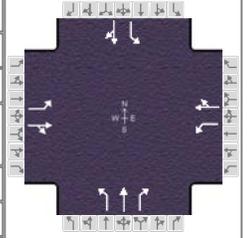
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	49	490		70	462		127	559	87	74	492	
Adjusted Saturation Flow Rate (s), veh/h/ln	945	1856		921	1853		919	1900	1610	864	1863	
Queue Service Time (g _s), s	4.1	23.1		2.4	21.4		7.5	14.4	2.0	4.6	12.4	
Cycle Queue Clearance Time (g _c), s	25.5	23.1		25.5	21.4		19.9	14.4	2.0	18.9	12.4	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	123	526		104	525		520	1172	993	475	1149	
Volume-to-Capacity Ratio (X)	0.398	0.932		0.668	0.880		0.245	0.477	0.088	0.156	0.429	
Back of Queue (Q), ft/ln (95 th percentile)	49.8	485.5		85.4	425.4		73.1	236.2	28.9	42.2	206.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.0	19.4		3.4	17.0		2.9	9.4	1.2	1.7	8.2	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	43.2	31.4		44.6	30.8		14.2	9.4	7.0	14.5	9.0	
Incremental Delay (d ₂), s/veh	0.8	23.3		12.5	15.3		1.1	1.4	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	44.0	54.7		57.1	46.1		15.3	10.8	7.2	15.2	10.2	
Level of Service (LOS)	D	D		E	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	53.7	D		47.5	D		11.1	B		10.8	B	
Intersection Delay, s/veh / LOS	28.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.38	A	1.36	A	1.76	B	1.42	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersecion #3	File Name	03PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	421	103	49	329	58	114	424	77	78	502	60

Signal Information				EB				WB				NB				SB			
Cycle, s	90.0	Reference Phase	2	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On																

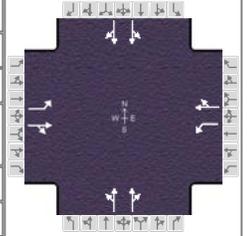
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	72	570		53	421		124	461	84	85	611	
Adjusted Saturation Flow Rate (s), veh/h/ln	982	1835		856	1850		823	1900	1610	946	1864	
Queue Service Time (g _s), s	6.5	25.5		0.0	19.0		9.1	11.0	1.9	4.5	16.8	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.0		25.9	11.0	1.9	15.5	16.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	151	520		80	524		434	1172	993	547	1150	
Volume-to-Capacity Ratio (X)	0.475	1.095		0.666	0.802		0.286	0.393	0.084	0.155	0.531	
Back of Queue (Q), ft/ln (95 th percentile)	72.3	744.6		68.6	359.6		82.2	190.9	27.7	44.1	264.8	
Back of Queue (Q), veh/ln (95 th percentile)	2.9	29.8		2.7	14.4		3.3	7.6	1.1	1.8	10.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	41.8	32.3		45.0	29.9		17.2	8.7	7.0	12.7	9.8	
Incremental Delay (d ₂), s/veh	0.9	68.0		15.6	8.1		1.6	1.0	0.2	0.6	1.8	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	42.6	100.3		60.6	38.0		18.9	9.7	7.1	13.3	11.6	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	93.8	F		40.6	D		11.1	B		11.8	B	
Intersection Delay, s/veh / LOS	38.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.55	B	1.27	A	1.59	B	1.64	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #4	File Name	04AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	158	72	69	163	37	109	603	27	22	563	18

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	34.8	22.7	19.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

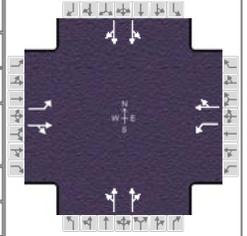
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		39.3		39.3		27.2		23.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g _s), s						21.5		17.8
Green Extension Time (g _e), s		0.0		0.0		1.2		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.08		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	28	250		75	217		421		383	344		311
Adjusted Saturation Flow Rate (s), veh/h/ln	1182	1799		1148	1839		1874		1874	1893		1879
Queue Service Time (g _s), s	1.5	8.9		4.5	7.4		19.5		17.3	15.8		14.1
Cycle Queue Clearance Time (g _c), s	8.9	8.9		13.4	7.4		19.5		17.3	15.8		14.1
Green Ratio (g/C)	0.39	0.39		0.39	0.39		0.25		0.25	0.21		0.21
Capacity (c), veh/h	440	696		410	712		473		473	399		396
Volume-to-Capacity Ratio (X)	0.064	0.359		0.183	0.306		0.889		0.809	0.863		0.786
Back of Queue (Q), ft/ln (95 th percentile)	20.1	172.2		58	145.2		370.8		316.9	291.5		261.8
Back of Queue (Q), veh/ln (95 th percentile)	0.8	6.9		2.3	5.8		14.8		12.7	11.7		10.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	22.3	19.6		24.4	19.2		32.4		31.6	34.3		33.6
Incremental Delay (d ₂), s/veh	0.3	1.4		1.0	1.1		9.7		4.1	2.2		1.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	22.6	21.1		25.4	20.3		42.1		35.7	36.5		34.9
Level of Service (LOS)	C	C		C	C		D		D	D		C
Approach Delay, s/veh / LOS	21.2	C		21.6	C		39.1		D	35.7		D
Intersection Delay, s/veh / LOS	33.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.93	B	1.95	B
Bicycle LOS Score / LOS	0.95	A	0.97	A	1.15	A	1.03	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #4	File Name	04PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	26	143	34	30	119	33	51	517	30	9	574	12

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On										
Force Mode	Fixed	Simult. Gap N/S	On										
		Green	38.9	18.6	18.9	0.0	0.0	0.0					
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
		Red	1.0	1.0	1.0	0.0	0.0	0.0					

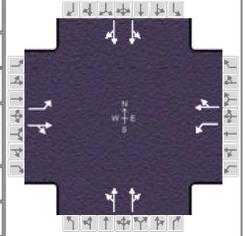
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		43.4		43.4		23.4		23.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g _s), s						17.7		17.6
Green Extension Time (g _e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	28	192		33	165		342		308	339		307
Adjusted Saturation Flow Rate (s), veh/h/ln	1240	1837		1210	1829		1885		1864	1897		1886
Queue Service Time (g _s), s	1.3	6.0		1.6	5.1		15.7		14.1	15.6		13.9
Cycle Queue Clearance Time (g _c), s	6.4	6.0		7.6	5.1		15.7		14.1	15.6		13.9
Green Ratio (g/C)	0.43	0.43		0.43	0.43		0.21		0.21	0.21		0.21
Capacity (c), veh/h	547	795		523	791		396		392	393		390
Volume-to-Capacity Ratio (X)	0.052	0.242		0.062	0.209		0.862		0.786	0.865		0.788
Back of Queue (Q), ft/ln (95 th percentile)	17.5	114.2		20.7	96.4		289.5		259.8	293.6		259.8
Back of Queue (Q), veh/ln (95 th percentile)	0.7	4.6		0.8	3.9		11.6		10.4	11.7		10.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	17.9	16.2		18.6	15.9		34.3		33.6	34.5		33.8
Incremental Delay (d ₂), s/veh	0.2	0.7		0.2	0.6		2.2		1.3	3.7		1.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	18.1	16.9		18.8	16.5		36.5		34.9	38.1		35.2
Level of Service (LOS)	B	B		B	B		D		C	D		D
Approach Delay, s/veh / LOS	17.0	B		16.9	B		35.8	D		36.7	D	
Intersection Delay, s/veh / LOS	31.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	0.85	A	0.81	A	1.02	A	1.02	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	California / Ardmore	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #5	File Name	05AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	70	236	111	51	144	43	36	665	29	39	542	75

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	33.3	20.6	22.6	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

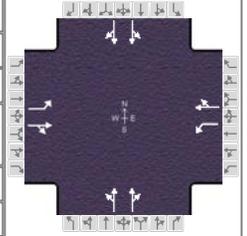
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		37.8		37.8		27.1		25.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.1
Queue Clearance Time (g _s), s						21.1		19.4
Green Extension Time (g _e), s		0.0		0.0		1.5		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	76	377		55	203		417		376	380		334
Adjusted Saturation Flow Rate (s), veh/h/ln	1198	1797		1022	1824		1891		1872	1889		1820
Queue Service Time (g _s), s	4.3	15.1		4.1	7.1		19.1		17.0	17.4		15.6
Cycle Queue Clearance Time (g _c), s	11.4	15.1		19.2	7.1		19.1		17.0	17.4		15.6
Green Ratio (g/C)	0.37	0.37		0.37	0.37		0.25		0.25	0.23		0.23
Capacity (c), veh/h	429	665		287	676		474		469	433		417
Volume-to-Capacity Ratio (X)	0.177	0.567		0.193	0.301		0.880		0.801	0.877		0.800
Back of Queue (Q), ft/ln (95 th percentile)	58.2	272.6		49.7	139.7		337		300.2	331.2		280.1
Back of Queue (Q), veh/ln (95 th percentile)	2.3	10.9		2.0	5.6		13.5		12.0	13.2		11.2
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	24.1	22.6		30.2	20.1		32.4		31.6	33.5		32.7
Incremental Delay (d ₂), s/veh	0.9	3.5		1.5	1.1		2.2		1.2	6.6		2.6
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	25.0	26.1		31.7	21.2		34.6		32.8	40.1		35.4
Level of Service (LOS)	C	C		C	C		C		C	D		D
Approach Delay, s/veh / LOS	25.9	C		23.5	C		33.8	C		37.9	D	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.24	A	0.91	A	1.14	A	1.08	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	California / Ardmore	Analysis Year	2019	Analysis Period	1 > 17:00
Intersection	Intersection #5	File Name	05PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	208	91	17	99	20	22	555	36	46	557	34

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	37.2	19.9	19.3	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

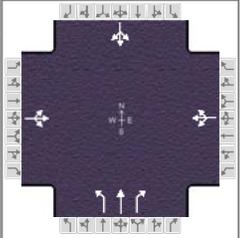
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		41.7		41.7		23.8		24.4
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						18.1		18.8
Green Extension Time (g _e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	325		18	129		352		315	365		328
Adjusted Saturation Flow Rate (s), veh/h/ln	1281	1801		1072	1844		1894		1858	1887		1862
Queue Service Time (g _s), s	1.4	11.6		1.1	4.0		16.1		14.4	16.8		15.0
Cycle Queue Clearance Time (g _c), s	5.4	11.6		12.7	4.0		16.1		14.4	16.8		15.0
Green Ratio (g/C)	0.41	0.41		0.41	0.41		0.21		0.21	0.22		0.22
Capacity (c), veh/h	553	746		385	763		407		399	418		412
Volume-to-Capacity Ratio (X)	0.057	0.436		0.048	0.169		0.865		0.788	0.873		0.795
Back of Queue (Q), ft/ln (95 th percentile)	19.8	215.3		13.6	76.9		295.8		263.9	317.5		274.3
Back of Queue (Q), veh/ln (95 th percentile)	0.8	8.6		0.5	3.1		11.8		10.6	12.7		11.0
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	18.3	18.9		23.4	16.6		34.1		33.4	33.8		33.1
Incremental Delay (d ₂), s/veh	0.2	1.9		0.2	0.5		2.2		1.3	5.6		1.9
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	18.5	20.7		23.7	17.1		36.3		34.7	39.5		35.0
Level of Service (LOS)	B	C		C	B		D		C	D		D
Approach Delay, s/veh / LOS	20.5	C		17.9	B		35.5	D		37.4	D	
Intersection Delay, s/veh / LOS	31.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.08	A	0.73	A	1.04	A	1.06	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	111	400	55	59	271	8	48	321	150	21	299	102

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	52.4	28.6	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

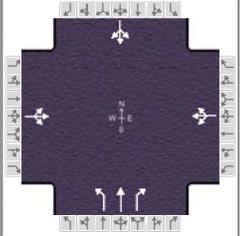
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		56.9		56.9		33.1		33.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						27.8		23.4
Green Extension Time (g _e), s		0.0		0.0		0.9		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.32

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	615			367			52	349	163	459		
Adjusted Saturation Flow Rate (s), veh/h/ln	1668			1625			968	1900	1610	1773		
Queue Service Time (g _s), s	11.8			0.0			4.7	13.8	6.9	7.6		
Cycle Queue Clearance Time (g _c), s	20.9			9.0			25.8	13.8	6.9	21.4		
Green Ratio (g/C)	0.58			0.58			0.32	0.32	0.32	0.32		
Capacity (c), veh/h	1021			995			159	601	509	603		
Volume-to-Capacity Ratio (X)	0.602			0.369			0.327	0.580	0.320	0.761		
Back of Queue (Q), ft/ln (95 th percentile)	311.9			172			50.7	256.6	116.8	368		
Back of Queue (Q), veh/ln (95 th percentile)	12.5			6.9			2.0	10.3	4.7	14.7		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	11.9			9.7			40.1	25.8	23.4	28.2		
Incremental Delay (d ₂), s/veh	2.6			1.1			0.4	0.6	0.1	4.3		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.6			10.7			40.5	26.4	23.5	32.6		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.6	B		10.7	B		26.9	C		32.6	C	
Intersection Delay, s/veh / LOS	21.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.65	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.50	B	1.09	A	1.42	A	1.24	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2019	Analysis Period	1 > 16:00
Intersection	Intersection #10	File Name	10PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	390	71	93	345	10	61	274	112	10	367	99

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
				Red	1.0	1.0	0.0	0.0	0.0	0.0				

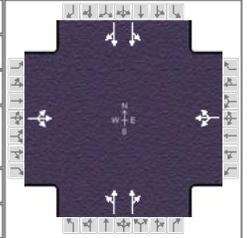
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.1		25.5
Green Extension Time (g _e), s		0.0		0.0		0.0		1.3
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.60

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	575			487			66	298	122	517		
Adjusted Saturation Flow Rate (s), veh/h/ln	1719			1570			907	1900	1610	1821		
Queue Service Time (g _s), s	1.7			0.0			6.5	11.1	4.9	4.6		
Cycle Queue Clearance Time (g _c), s	18.5			16.8			30.1	11.1	4.9	23.5		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1010			929			150	644	546	658		
Volume-to-Capacity Ratio (X)	0.569			0.524			0.441	0.463	0.223	0.786		
Back of Queue (Q), ft/ln (95 th percentile)	296.3			256.2			66.4	211.8	81.5	413.2		
Back of Queue (Q), veh/ln (95 th percentile)	11.9			10.2			2.7	8.5	3.3	16.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.6			12.0			41.3	23.3	21.3	27.4		
Incremental Delay (d ₂), s/veh	2.3			2.1			0.8	0.2	0.1	5.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	14.9			14.1			42.1	23.5	21.4	33.2		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	14.9	B		14.1	B		25.5	C		33.2	C	
Intersection Delay, s/veh / LOS	21.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.44	A	1.29	A	1.29	A	1.34	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Independence	Analysis Year	2019	Analysis Period	1 > 7:15
Intersection	Intersection #11	File Name	11AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	39	102	111	33	28	9	107	547	84	40	476	37

Signal Information				Signal Timing (s)								Signal Phases							
Cycle, s	90.0	Reference Phase	2	Green	35.6	17.7	23.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Force Mode	Fixed	Simult. Gap N/S	On																

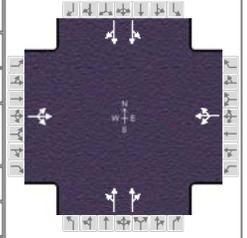
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		40.1		40.1		27.7		22.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						21.6		16.6
Green Extension Time (g _e), s		0.0		0.0		1.6		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	274			76			426			317		
Adjusted Saturation Flow Rate (s), veh/h/ln	1698			1437			1874			1887		
Queue Service Time (g _s), s	0.0			0.0			19.6			14.6		
Cycle Queue Clearance Time (g _c), s	10.0			2.4			19.6			14.6		
Green Ratio (g/C)	0.40			0.40			0.26			0.20		
Capacity (c), veh/h	718			627			484			370		
Volume-to-Capacity Ratio (X)	0.382			0.121			0.880			0.856		
Back of Queue (Q), ft/ln (95 th percentile)	188.8			47.5			344.9			276.6		
Back of Queue (Q), veh/ln (95 th percentile)	7.6			1.9			13.8			11.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	19.5			17.1			32.0			34.9		
Incremental Delay (d ₂), s/veh	1.5			0.4			2.1			2.2		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	21.0			17.5			34.1			37.2		
Level of Service (LOS)	C			B			C			D		
Approach Delay, s/veh / LOS	21.0	C		17.5	B		33.3	C		36.5	D	
Intersection Delay, s/veh / LOS	31.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	0.94	A	0.61	A	1.15	A	0.98	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Independence	Analysis Year	2019	Analysis Period	1 > 16:45
Intersection	Intersection #11	File Name	11PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	25	50	64	53	57	16	122	482	48	19	512	29

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	38.1	20.5	17.9	0.0	0.0	0.0				
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
		Red	1.0	1.0	1.0	0.0	0.0	0.0				

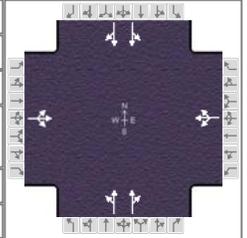
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		42.6		42.6		25.0		22.4
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						19.3		16.7
Green Extension Time (g _e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.02		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	151			137			373			288		
Adjusted Saturation Flow Rate (s), veh/h/ln	1667			1577			1867			1894		
Queue Service Time (g _s), s	0.0			0.0			17.3			14.7		
Cycle Queue Clearance Time (g _c), s	4.9			4.4			17.3			14.7		
Green Ratio (g/C)	0.42			0.42			0.23			0.20		
Capacity (c), veh/h	753			724			426			376		
Volume-to-Capacity Ratio (X)	0.201			0.189			0.875			0.778		
Back of Queue (Q), ft/ln (95 th percentile)	89.9			83.8			328.9			278.8		
Back of Queue (Q), veh/ln (95 th percentile)	3.6			3.4			13.2			11.2		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	16.4			16.2			33.5			34.8		
Incremental Delay (d ₂), s/veh	0.6			0.6			6.5			2.2		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	17.0			16.8			39.9			35.5		
Level of Service (LOS)	B			B			D			D		
Approach Delay, s/veh / LOS	17.0	B		16.8	B		37.7	D		36.3	D	
Intersection Delay, s/veh / LOS	33.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.71	B	1.73	B
Bicycle LOS Score / LOS	0.74	A	0.71	A	1.07	A	0.99	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - AM	PHF	0.92
Urban Street	Otis / Ardmore	Analysis Year	2019	Analysis Period	1 > 7:00
Intersection	Intersection #12	File Name	12AM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	108	5	275	3	2	1	80	625	5	2	544	68

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	35.1	19.4	22.0	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

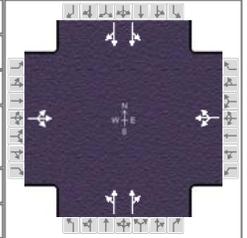
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		39.6		39.6		26.5		23.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						20.5		18.3
Green Extension Time (g _e), s		0.0		0.0		1.5		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	422			7			403	369		356	312	
Adjusted Saturation Flow Rate (s), veh/h/ln	1576			1192			1880	1895		1899	1822	
Queue Service Time (g _s), s	15.4			0.0			18.5	16.4		16.3	14.6	
Cycle Queue Clearance Time (g _c), s	19.9			0.2			18.5	16.4		16.3	14.6	
Green Ratio (g/C)	0.39			0.39			0.24	0.24		0.22	0.22	
Capacity (c), veh/h	665			524			460	464		410	393	
Volume-to-Capacity Ratio (X)	0.634			0.012			0.875	0.796		0.868	0.793	
Back of Queue (Q), ft/ln (95 th percentile)	309.9			4.1			330.7	299.4		311	265.5	
Back of Queue (Q), veh/ln (95 th percentile)	12.4			0.2			13.2	12.0		12.4	10.6	
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00		0.00	0.00	
Uniform Delay (d ₁), s/veh	22.7			16.8			32.7	31.9		34.0	33.4	
Incremental Delay (d ₂), s/veh	4.6			0.0			2.1	1.2		4.7	1.5	
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0		0.0	0.0	
Control Delay (d), s/veh	27.3			16.9			34.8	33.1		38.8	34.9	
Level of Service (LOS)	C			B			C	C		D	C	
Approach Delay, s/veh / LOS	27.3	C		16.9	B		34.0	C		37.0	D	
Intersection Delay, s/veh / LOS	33.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.18	A	0.50	A	1.12	A	1.04	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 4, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Existing with Project - PM	PHF	0.92
Urban Street	Otis / Ardmore	Analysis Year	2019	Analysis Period	1 > 16:30
Intersection	Intersection #12	File Name	12PM - Existing with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	69	2	261	4	2	1	60	580	1	1	589	40

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	36.7	19.7	20.1	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

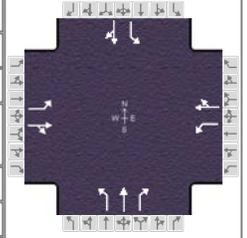
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		41.2		41.2		24.6		24.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						18.7		18.6
Green Extension Time (g _e), s		0.0		0.0		1.3		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	361			8			363			323		
Adjusted Saturation Flow Rate (s), veh/h/ln	1591			1197			1883			1855		
Queue Service Time (g _s), s	7.8			0.0			16.7			14.8		
Cycle Queue Clearance Time (g _c), s	15.3			0.2			16.7			14.8		
Green Ratio (g/C)	0.41			0.41			0.22			0.22		
Capacity (c), veh/h	697			551			420			407		
Volume-to-Capacity Ratio (X)	0.518			0.014			0.866			0.793		
Back of Queue (Q), ft/ln (95 th percentile)	248.5			4.6			306.3			273.4		
Back of Queue (Q), veh/ln (95 th percentile)	9.9			0.2			12.3			10.9		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	20.2			15.8			33.7			33.2		
Incremental Delay (d ₂), s/veh	2.7			0.0			2.2			1.7		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	23.0			15.9			35.8			34.9		
Level of Service (LOS)	C			B			D			C		
Approach Delay, s/veh / LOS	23.0	C		15.9	B		35.1	D		37.1	D	
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.08	A	0.50	A	1.06	A	1.05	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - AM	PHF	0.92
Urban Street	California / Santa Ana		Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #3		File Name	03AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	380	60	59	360	61	119	526	73	69	414	51

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.5	25.5	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

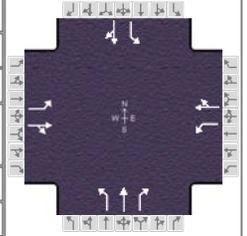
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	51	478		64	458		129	572	79	75	505	
Adjusted Saturation Flow Rate (s), veh/h/ln	949	1854		931	1852		908	1900	1610	854	1863	
Queue Service Time (g _s), s	4.3	22.4		3.1	21.2		7.9	14.9	1.8	4.8	12.8	
Cycle Queue Clearance Time (g _c), s	25.5	22.4		25.5	21.2		20.7	14.9	1.8	19.6	12.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	126	525		112	525		510	1172	993	466	1149	
Volume-to-Capacity Ratio (X)	0.407	0.910		0.573	0.872		0.253	0.488	0.080	0.161	0.440	
Back of Queue (Q), ft/ln (95 th percentile)	52	458.6		70.1	417.7		75.8	242.5	26.3	43.5	212.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.1	18.3		2.8	16.7		3.0	9.7	1.1	1.7	8.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	43.1	31.1		44.2	30.7		14.5	9.5	7.0	14.8	9.1	
Incremental Delay (d ₂), s/veh	0.8	19.5		4.5	14.3		1.2	1.5	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.9	50.7		48.8	45.0		15.7	10.9	7.1	15.6	10.3	
Level of Service (LOS)	D	D		D	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	50.0	D		45.5	D		11.3	B		11.0	B	
Intersection Delay, s/veh / LOS	27.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.36	A	1.35	A	1.78	B	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - PM	PHF
Urban Street	California / Santa Ana		Analysis Year	2021	Analysis Period
Intersection	Intersecion #3		File Name	03PM - Future.xus	
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	432	105	53	338	59	116	436	81	80	517	62

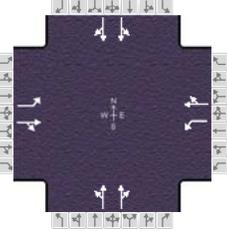
Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

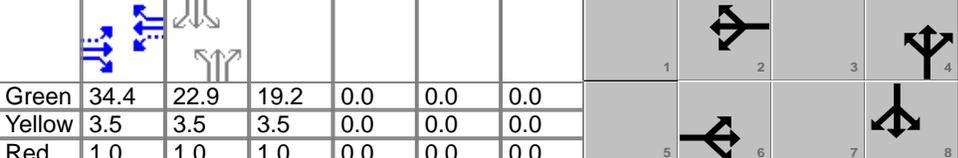
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	74	584		58	432		126	474	88	87	629	
Adjusted Saturation Flow Rate (s), veh/h/ln	972	1835		844	1850		809	1900	1610	935	1864	
Queue Service Time (g _s), s	5.9	25.5		0.0	19.6		9.6	11.5	2.0	4.7	17.6	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.6		27.2	11.5	2.0	16.2	17.6	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	144	520		80	524		421	1172	993	537	1150	
Volume-to-Capacity Ratio (X)	0.515	1.122		0.720	0.823		0.300	0.404	0.089	0.162	0.547	
Back of Queue (Q), ft/ln (95 th percentile)	76	798.8		80.9	374.9		85.8	196.7	29.3	46	274.8	
Back of Queue (Q), veh/ln (95 th percentile)	3.0	32.0		3.2	15.0		3.4	7.9	1.2	1.8	11.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	42.5	32.3		45.0	30.1		17.9	8.8	7.0	12.9	10.0	
Incremental Delay (d ₂), s/veh	1.4	77.6		23.6	9.6		1.8	1.0	0.2	0.6	1.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	43.9	109.9		68.6	39.7		19.7	9.8	7.2	13.6	11.9	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	102.4	F		43.2	D		11.3	B		12.1	B	
Intersection Delay, s/veh / LOS	41.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.57	B	1.29	A	1.62	B	1.67	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of South Gate	Time Period	Future - AM	PHF	0.92	
Urban Street	California / Independence	Analysis Year	2021	Analysis Period	1 > 7:00	
Intersection	Intersection #4	File Name	04AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	28	155	73	70	161	38	111	608	28	22	570	19

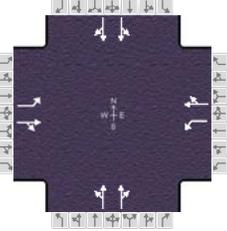
Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	34.4	22.9	19.2	0.0	0.0	0.0				
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		38.9		38.9		27.4		23.7
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g_s), s						21.7		18.0
Green Extension Time (g_e), s		0.0		0.0		1.2		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.09		0.00

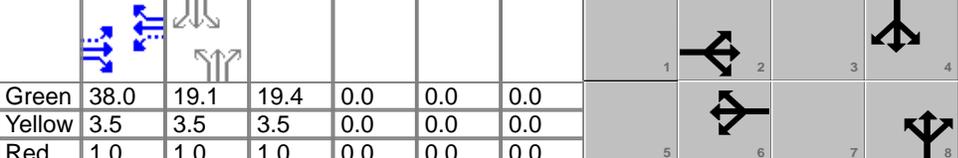
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	30	248		76	216		425		387	349		315
Adjusted Saturation Flow Rate (s), veh/h/ln	1183	1796		1150	1837		1873		1873	1894		1878
Queue Service Time (g_s), s	1.7	8.9		4.6	7.4		19.7		17.5	16.0		14.3
Cycle Queue Clearance Time (g_c), s	9.1	8.9		13.5	7.4		19.7		17.5	16.0		14.3
Green Ratio (g/C)	0.38	0.38		0.38	0.38		0.25		0.25	0.21		0.21
Capacity (c), veh/h	434	686		406	702		477		477	404		400
Volume-to-Capacity Ratio (X)	0.070	0.361		0.188	0.308		0.890		0.810	0.865		0.787
Back of Queue (Q), ft/ln (95 th percentile)	21.9	172.5		59.5	146.3		375.3		320.4	294.3		264.5
Back of Queue (Q), veh/ln (95 th percentile)	0.9	6.9		2.4	5.9		15.0		12.8	11.8		10.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	22.7	19.9		24.8	19.5		32.3		31.5	34.2		33.5
Incremental Delay (d_2), s/veh	0.3	1.5		1.0	1.1		10.0		4.3	2.2		1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	23.0	21.4		25.8	20.6		42.3		35.8	36.4		34.8
Level of Service (LOS)	C	C		C	C		D		D	D		C
Approach Delay, s/veh / LOS	21.6	C		22.0	C		39.2	D		35.6	D	
Intersection Delay, s/veh / LOS	33.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.93	B	1.95	B
Bicycle LOS Score / LOS	0.95	A	0.97	A	1.16	A	1.04	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of South Gate	Time Period	Future - PM	PHF	0.92	
Urban Street	California / Independence	Analysis Year	2021	Analysis Period	1 > 17:00	
Intersection	Intersection #4	File Name	04PM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	144	35	31	121	34	52	531	31	9	591	14

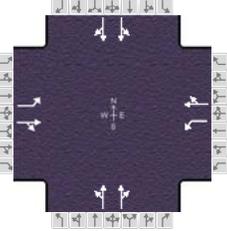
Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	38.0	19.1	19.4	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		42.5		42.5		23.9		23.6
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g_s), s						18.2		18.1
Green Extension Time (g_e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

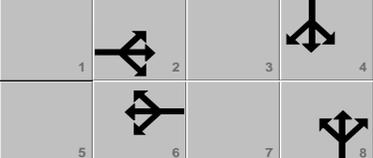
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	195		34	168		351		316	351		317
Adjusted Saturation Flow Rate (s), veh/h/ln	1236	1835		1207	1828		1885		1864	1897		1884
Queue Service Time (g_s), s	1.5	6.2		1.7	5.3		16.2		14.4	16.1		14.3
Cycle Queue Clearance Time (g_c), s	6.8	6.2		7.8	5.3		16.2		14.4	16.1		14.3
Green Ratio (g/C)	0.42	0.42		0.42	0.42		0.22		0.22	0.21		0.21
Capacity (c), veh/h	529	774		506	771		406		402	404		401
Volume-to-Capacity Ratio (X)	0.060	0.251		0.067	0.218		0.865		0.788	0.868		0.791
Back of Queue (Q), ft/ln (95 th percentile)	20.1	118.7		22	101		295.8		265	303.9		265.7
Back of Queue (Q), veh/ln (95 th percentile)	0.8	4.7		0.9	4.0		11.8		10.6	12.2		10.6
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d_1), s/veh	18.7	16.8		19.4	16.6		34.0		33.4	34.2		33.5
Incremental Delay (d_2), s/veh	0.2	0.8		0.3	0.7		2.2		1.3	4.5		1.3
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	18.9	17.6		19.6	17.2		36.2		34.7	38.7		34.9
Level of Service (LOS)	B	B		B	B		D		C	D		C
Approach Delay, s/veh / LOS	17.8		B	17.6		B	35.5		D	36.9		D
Intersection Delay, s/veh / LOS	31.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	0.86	A	0.82	A	1.04	A	1.04	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of South Gate	Time Period	Future - AM	PHF	0.92	
Urban Street	California / Ardmore	Analysis Year	2021	Analysis Period	1 > 7:15	
Intersection	Intersection #5	File Name	05AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	71	236	113	43	143	44	37	671	19	40	549	77

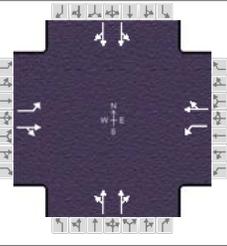
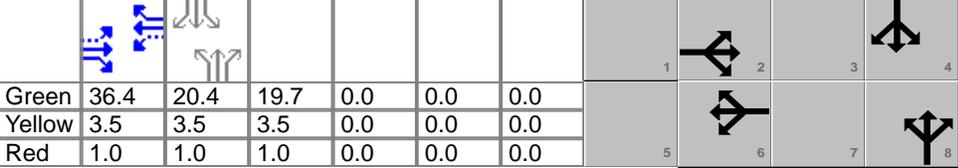
Signal Information																		
Cycle, s	90.0	Reference Phase	2	Green	33.2	20.9	22.4	0.0	0.0	0.0								
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0								
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0								
Force Mode	Fixed	Simult. Gap N/S	On															

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		37.7		37.7		26.9		25.4
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.1
Queue Clearance Time (g _s), s						21.0		19.7
Green Extension Time (g _e), s		0.0		0.0		1.4		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	77	379		47	203		415		376	385		338
Adjusted Saturation Flow Rate (s), veh/h/ln	1198	1795		1019	1823		1891		1881	1889		1819
Queue Service Time (g _s), s	4.4	15.2		3.5	7.1		19.0		16.9	17.7		15.8
Cycle Queue Clearance Time (g _c), s	11.5	15.2		18.7	7.1		19.0		16.9	17.7		15.8
Green Ratio (g/C)	0.37	0.37		0.37	0.37		0.25		0.25	0.23		0.23
Capacity (c), veh/h	427	662		283	672		471		469	439		422
Volume-to-Capacity Ratio (X)	0.181	0.573		0.165	0.303		0.880		0.801	0.879		0.801
Back of Queue (Q), ft/ln (95 th percentile)	59.4	275.6		41.7	140.3		335.2		299.9	336.9		284.4
Back of Queue (Q), veh/ln (95 th percentile)	2.4	11.0		1.7	5.6		13.4		12.0	13.5		11.4
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	24.3	22.7		30.2	20.2		32.5		31.7	33.3		32.6
Incremental Delay (d ₂), s/veh	0.9	3.6		1.3	1.2		2.2		1.2	7.0		2.8
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	25.2	26.3		31.5	21.3		34.7		32.9	40.4		35.4
Level of Service (LOS)	C	C		C	C		C		C	D		D
Approach Delay, s/veh / LOS	26.1	C		23.2	C		33.8	C		38.1	D	
Intersection Delay, s/veh / LOS	32.4						C					

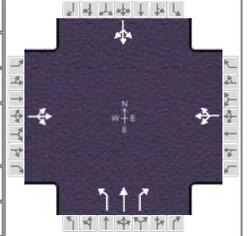
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.24	A	0.90	A	1.14	A	1.08	A

HCS7 Signalized Intersection Results Summary

General Information						Intersection Information									
Agency	LLG Engineers					Duration, h	0.25								
Analyst	AS	Analysis Date	Dec 13, 2019			Area Type	Other								
Jurisdiction	City of South Gate		Time Period	Future - PM		PHF	0.92								
Urban Street	California / Ardmore		Analysis Year	2021		Analysis Period	1 > 17:00								
Intersection	Intersection #5		File Name	05PM - Future.xus											
Project Description	7801-7835 Otis Avenue Charter School														
Demand Information				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h				30	211	93	15	102	20	22	570	34	47	574	35
Signal Information															
Cycle, s	90.0	Reference Phase	2	Green	36.4	20.4	19.7	0.0	0.0	0.0					
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On												
Timer Results				EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase					2		6		8			4			
Case Number					6.0		6.0		12.0			12.0			
Phase Duration, s					40.9		40.9		24.2			24.9			
Change Period, ($Y+R_c$), s					4.5		4.5		4.5			4.5			
Max Allow Headway (MAH), s					0.0		0.0		3.0			3.1			
Queue Clearance Time (g_s), s									18.4			19.3			
Green Extension Time (g_e), s					0.0		0.0		1.2			1.2			
Phase Call Probability									1.00			1.00			
Max Out Probability									0.00			0.02			
Movement Group Results				EB			WB			NB			SB		
Approach Movement				L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement				5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h				33	330		16	133		359	322	376		338	
Adjusted Saturation Flow Rate (s), veh/h/ln				1277	1801		1066	1846		1894	1861	1887		1862	
Queue Service Time (g_s), s				1.5	12.1		1.0	4.2		16.4	14.7	17.3		15.4	
Cycle Queue Clearance Time (g_c), s				5.7	12.1		13.1	4.2		16.4	14.7	17.3		15.4	
Green Ratio (g/C)				0.40	0.40		0.40	0.40		0.22	0.22	0.23		0.23	
Capacity (c), veh/h				537	728		368	746		414	407	429		423	
Volume-to-Capacity Ratio (X)				0.061	0.454		0.044	0.178		0.867	0.790	0.876		0.798	
Back of Queue (Q), ft/ln (95 th percentile)				20.9	223		12.3	80.6		300.7	268.2	327.8		282.3	
Back of Queue (Q), veh/ln (95 th percentile)				0.8	8.9		0.5	3.2		12.0	10.7	13.1		11.3	
Queue Storage Ratio (RQ) (95 th percentile)				0.00	0.00		0.00	0.00		0.00	0.00	0.00		0.00	
Uniform Delay (d_1), s/veh				19.0	19.6		24.3	17.2		33.9	33.2	33.6		32.8	
Incremental Delay (d_2), s/veh				0.2	2.0		0.2	0.5		2.2	1.3	6.4		2.4	
Initial Queue Delay (d_3), s/veh				0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Control Delay (d), s/veh				19.2	21.6		24.6	17.7		36.1	34.5	40.0		35.2	
Level of Service (LOS)				B	C		C	B		D	C	D		D	
Approach Delay, s/veh / LOS				21.4	C		18.5	B		35.3	D		37.7	D	
Intersection Delay, s/veh / LOS				32.3						C					
Multimodal Results				EB			WB			NB			SB		
Pedestrian LOS Score / LOS				2.10	B		2.10	B		1.95	B		1.93	B	
Bicycle LOS Score / LOS				1.09	A		0.73	A		1.05	A		1.08	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	66	412	56	61	278	8	49	293	153	21	275	68

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	55.3	25.7	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

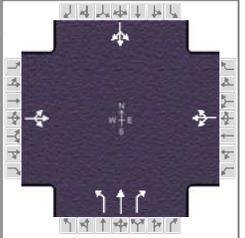
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		59.8		59.8		30.2		30.2
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						24.6		21.1
Green Extension Time (g _e), s		0.0		0.0		1.4		1.7
Phase Call Probability						1.00		1.00
Max Out Probability						0.41		0.13

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	580			377			53	318	166	396		
Adjusted Saturation Flow Rate (s), veh/h/ln	1748			1639			1026	1900	1610	1743		
Queue Service Time (g _s), s	2.0			0.0			4.5	13.0	7.4	6.4		
Cycle Queue Clearance Time (g _c), s	15.8			8.6			22.6	13.0	7.4	19.1		
Green Ratio (g/C)	0.61			0.61			0.29	0.29	0.29	0.29		
Capacity (c), veh/h	1125			1059			164	536	454	534		
Volume-to-Capacity Ratio (X)	0.516			0.356			0.325	0.594	0.366	0.741		
Back of Queue (Q), ft/ln (95 th percentile)	255.1			158.1			51.6	244.6	126.8	324.9		
Back of Queue (Q), veh/ln (95 th percentile)	10.2			6.3			2.1	9.8	5.1	13.0		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	9.5			8.2			40.0	27.9	25.9	29.8		
Incremental Delay (d ₂), s/veh	1.7			0.9			0.4	0.4	0.2	2.9		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	11.2			9.1			40.4	28.2	26.0	32.7		
Level of Service (LOS)	B			A			D	C	C	C		
Approach Delay, s/veh / LOS	11.2	B		9.1	A		28.8	C		32.7	C	
Intersection Delay, s/veh / LOS	20.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.23	B	1.65	B	1.70	B	1.70	B
Bicycle LOS Score / LOS	1.45	A	1.11	A	1.38	A	1.14	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of Huntington Park / City of South Gate		Time Period	Future - PM	PHF	0.92
Urban Street	Otis / Santa Ana		Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #10		File Name	10PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School					



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	59	409	72	96	354	10	62	280	115	10	376	101

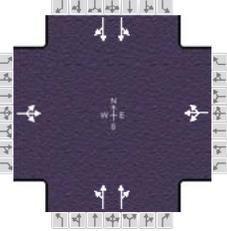
Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.5		26.3
Green Extension Time (g _e), s		0.0		0.0		0.0		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.77

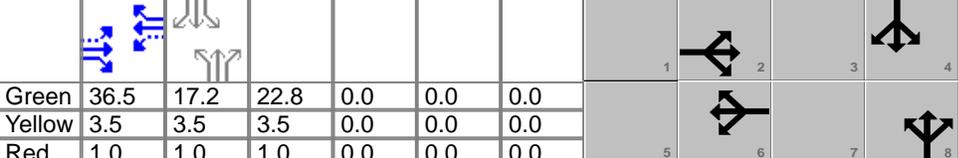
Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	587			500			67	304	125	529		
Adjusted Saturation Flow Rate (s), veh/h/ln	1742			1555			897	1900	1610	1822		
Queue Service Time (g _s), s	0.8			0.0			6.2	11.3	5.0	5.4		
Cycle Queue Clearance Time (g _c), s	18.8			18.0			30.5	11.3	5.0	24.3		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1022			921			142	644	546	658		
Volume-to-Capacity Ratio (X)	0.575			0.543			0.475	0.473	0.229	0.804		
Back of Queue (Q), ft/ln (95 th percentile)	302.9			266.3			68.4	216	83.8	428.4		
Back of Queue (Q), veh/ln (95 th percentile)	12.1			10.7			2.7	8.6	3.4	17.1		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.7			12.2			42.2	23.4	21.3	27.7		
Incremental Delay (d ₂), s/veh	2.4			2.3			0.9	0.2	0.1	6.7		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	15.1			14.5			43.1	23.6	21.4	34.4		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	15.1	B		14.5	B		25.7	C		34.4	C	
Intersection Delay, s/veh / LOS	22.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.46	A	1.31	A	1.31	A	1.36	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information		
Agency	LLG Engineers			Duration, h	0.25	
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other	
Jurisdiction	City of South Gate	Time Period	Future - AM	PHF	0.92	
Urban Street	Otis / Independence	Analysis Year	2021	Analysis Period	1 > 7:15	
Intersection	Intersection #11	File Name	11AM - Future.xus			
Project Description	7801-7835 Otis Avenue Charter School					

Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	34	104	113	34	29	9	109	528	86	41	463	33

Signal Information														
Cycle, s	90.0	Reference Phase	2	Green	36.5	17.2	22.8	0.0	0.0	0.0	1	2	3	4
Offset, s	0	Reference Point	End	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5	6	7	8
Uncoordinated	No	Simult. Gap E/W	On	Red	1.0	1.0	1.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On											

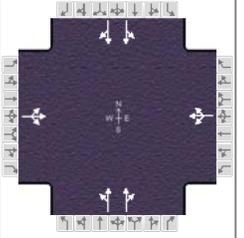
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		41.0		41.0		27.3		21.7
Change Period, ($Y+R_c$), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g_s), s						21.2		16.2
Green Extension Time (g_e), s		0.0		0.0		1.6		1.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	273			78			417			308		
Adjusted Saturation Flow Rate (s), veh/h/ln	1705			1436			1873			1817		
Queue Service Time (g_s), s	0.0			0.0			19.2			17.1		
Cycle Queue Clearance Time (g_c), s	9.8			2.4			19.2			17.1		
Green Ratio (g/C)	0.41			0.41			0.25			0.25		
Capacity (c), veh/h	736			641			475			361		
Volume-to-Capacity Ratio (X)	0.371			0.122			0.878			0.853		
Back of Queue (Q), ft/ln (95 th percentile)	184			48			339.7			270		
Back of Queue (Q), veh/ln (95 th percentile)	7.4			1.9			13.6			10.8		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d_1), s/veh	18.8			16.6			32.2			31.4		
Incremental Delay (d_2), s/veh	1.4			0.4			2.1			1.2		
Initial Queue Delay (d_3), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	20.3			17.0			34.4			32.7		
Level of Service (LOS)	C			B			C			C		
Approach Delay, s/veh / LOS	20.3	C		17.0	B		33.6	C		36.7	D	
Intersection Delay, s/veh / LOS	31.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	0.94	A	0.62	A	1.14	A	0.97	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information			
Agency	LLG Engineers			Duration, h	0.25		
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other		
Jurisdiction	City of South Gate	Time Period	Future - PM	PHF	0.92		
Urban Street	Otis / Independence	Analysis Year	2021	Analysis Period	1 > 16:45		
Intersection	Intersection #11	File Name	11PM - Future.xus				
Project Description	7801-7835 Otis Avenue Charter School						



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	23	51	65	54	58	16	124	495	49	19	526	30

Signal Information				Signal Phases											
Cycle, s	90.0	Reference Phase	2												
Offset, s	0	Reference Point	End	Green	37.2	21.0	18.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uncoordinated	No	Simult. Gap E/W	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		41.7		41.7		25.5		22.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						19.7		17.1
Green Extension Time (g _e), s		0.0		0.0		1.2		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.03		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	151			139			382			296		
Adjusted Saturation Flow Rate (s), veh/h/ln	1675			1576			1867			1894		
Queue Service Time (g _s), s	0.0			0.0			17.7			15.1		
Cycle Queue Clearance Time (g _c), s	5.0			4.6			17.7			15.1		
Green Ratio (g/C)	0.41			0.41			0.23			0.20		
Capacity (c), veh/h	739			709			435			385		
Volume-to-Capacity Ratio (X)	0.204			0.196			0.877			0.856		
Back of Queue (Q), ft/ln (95 th percentile)	91.7			86.9			337.6			284.5		
Back of Queue (Q), veh/ln (95 th percentile)	3.7			3.5			13.5			11.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	16.9			16.8			33.3			34.6		
Incremental Delay (d ₂), s/veh	0.6			0.6			7.1			2.2		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	17.6			17.4			40.3			36.8		
Level of Service (LOS)	B			B			D			D		
Approach Delay, s/veh / LOS	17.6	B		17.4	B		37.9	D		36.1	D	
Intersection Delay, s/veh / LOS	33.6						C					

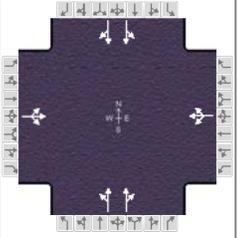
Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.71	B	1.73	B
Bicycle LOS Score / LOS	0.74	A	0.72	A	1.09	A	1.00	A

HCS7 Signalized Intersection Results Summary

General Information						Intersection Information											
Agency	LLG Engineers					Duration, h	0.25										
Analyst	AS	Analysis Date	Dec 13, 2019			Area Type	Other										
Jurisdiction	City of South Gate		Time Period	Future - AM		PHF	0.92										
Urban Street	Otis / Ardmore		Analysis Year	2021		Analysis Period	1 > 7:00										
Intersection	Intersection #12		File Name	12AM - Future.xus													
Project Description	7801-7835 Otis Avenue Charter School																
Demand Information						EB			WB			NB			SB		
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h						95	5	281	3	2	1	82	624	5	2	547	56
Signal Information																	
Cycle, s	90.0	Reference Phase	2			Green	35.3	19.1	22.1	0.0	0.0	0.0					
Offset, s	0	Reference Point	End			Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
Uncoordinated	No	Simult. Gap E/W	On			Red	1.0	1.0	1.0	0.0	0.0	0.0					
Force Mode	Fixed	Simult. Gap N/S	On														
Timer Results						EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Assigned Phase							2		6		8		4				
Case Number							8.0		8.0		12.0		12.0				
Phase Duration, s							39.8		39.8		26.6		23.6				
Change Period, (Y+R _c), s							4.5		4.5		4.5		4.5				
Max Allow Headway (MAH), s							0.0		0.0		3.1		3.1				
Queue Clearance Time (g _s), s											20.6		18.0				
Green Extension Time (g _e), s							0.0		0.0		1.5		1.1				
Phase Call Probability											1.00		1.00				
Max Out Probability											0.00		0.01				
Movement Group Results						EB			WB			NB			SB		
Approach Movement						L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement						5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h						414			7			403			370		
Adjusted Saturation Flow Rate (s), veh/h/ln						1583			1186			1879			1895		
Queue Service Time (g _s), s						13.7			0.0			18.6			16.5		
Cycle Queue Clearance Time (g _c), s						19.1			0.2			18.6			16.5		
Green Ratio (g/C)						0.39			0.39			0.25			0.25		
Capacity (c), veh/h						671			526			460			464		
Volume-to-Capacity Ratio (X)						0.617			0.012			0.875			0.796		
Back of Queue (Q), ft/ln (95 th percentile)						300.7			4.1			331.4			299.7		
Back of Queue (Q), veh/ln (95 th percentile)						12.0			0.2			13.3			12.0		
Queue Storage Ratio (RQ) (95 th percentile)						0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh						22.3			16.7			32.7			31.9		
Incremental Delay (d ₂), s/veh						4.2			0.0			2.1			1.2		
Initial Queue Delay (d ₃), s/veh						0.0			0.0			0.0			0.0		
Control Delay (d), s/veh						26.5			16.7			34.8			33.1		
Level of Service (LOS)						C			B			C			C		
Approach Delay, s/veh / LOS						26.5	C		16.7	B		34.0	C		36.8	D	
Intersection Delay, s/veh / LOS						33.2						C					
Multimodal Results						EB			WB			NB			SB		
Pedestrian LOS Score / LOS						2.10	B		2.10	B		1.73	B		1.70	B	
Bicycle LOS Score / LOS						1.17	A		0.50	A		1.13	A		1.03	A	

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future - PM	PHF	0.92
Urban Street	Otis / Ardmore	Analysis Year	2021	Analysis Period	1 > 16:30
Intersection	Intersection #12	File Name	12PM - Future.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	67	2	266	4	2	1	61	597	1	1	605	39

Signal Information				Signal Phases								
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
Green	35.8	20.1	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	3.5	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

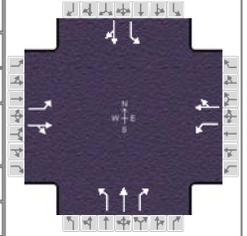
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		40.3		40.3		25.1		24.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						19.2		18.9
Green Extension Time (g _e), s		0.0		0.0		1.4		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	364			8			374			343		
Adjusted Saturation Flow Rate (s), veh/h/ln	1593			1178			1883			1899		
Queue Service Time (g _s), s	7.9			0.0			17.2			15.3		
Cycle Queue Clearance Time (g _c), s	15.7			0.2			17.2			15.3		
Green Ratio (g/C)	0.40			0.40			0.23			0.23		
Capacity (c), veh/h	682			531			430			434		
Volume-to-Capacity Ratio (X)	0.534			0.014			0.869			0.790		
Back of Queue (Q), ft/ln (95 th percentile)	255.7			4.7			312.9			283.9		
Back of Queue (Q), veh/ln (95 th percentile)	10.2			0.2			12.5			11.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	21.0			16.4			33.4			32.7		
Incremental Delay (d ₂), s/veh	3.0			0.0			2.1			1.2		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	24.0			16.4			35.6			33.9		
Level of Service (LOS)	C			B			D			C		
Approach Delay, s/veh / LOS	24.0	C		16.4	B		34.8	C		37.4	D	
Intersection Delay, s/veh / LOS	33.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.09	A	0.50	A	1.08	A	1.07	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersecion #3	File Name	03AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	47	401	60	68	378	61	119	526	83	69	414	51

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On	Green	55.5	25.5	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0

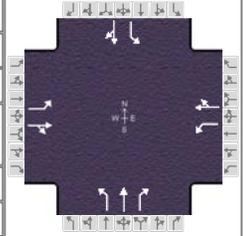
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		4		8		2		6
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	7	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow Rate (v), veh/h	51	501		74	477		129	572	90	75	505	
Adjusted Saturation Flow Rate (s), veh/h/ln	932	1857		911	1854		908	1900	1610	854	1863	
Queue Service Time (g _s), s	3.1	23.8		1.7	22.4		7.9	14.9	2.0	4.8	12.8	
Cycle Queue Clearance Time (g _c), s	25.5	23.8		25.5	22.4		20.7	14.9	2.0	19.6	12.8	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	113	526		97	525		510	1172	993	466	1149	
Volume-to-Capacity Ratio (X)	0.454	0.953		0.764	0.909		0.253	0.488	0.091	0.161	0.440	
Back of Queue (Q), ft/ln (95 th percentile)	52.3	513.3		106.3	456.3		75.8	242.5	30	43.5	212.2	
Back of Queue (Q), veh/ln (95 th percentile)	2.1	20.5		4.3	18.3		3.0	9.7	1.2	1.7	8.5	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	44.0	31.7		44.8	31.1		14.5	9.5	7.0	14.8	9.1	
Incremental Delay (d ₂), s/veh	1.1	27.4		27.1	19.3		1.2	1.5	0.2	0.7	1.2	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	45.1	59.1		71.9	50.4		15.7	10.9	7.2	15.6	10.3	
Level of Service (LOS)	D	E		E	D		B	B	A	B	B	
Approach Delay, s/veh / LOS	57.8	E		53.3	D		11.3	B		11.0	B	
Intersection Delay, s/veh / LOS	30.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.40	A	1.40	A	1.79	B	1.45	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California / Santa Ana	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersecion #3	File Name	03PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	68	437	105	55	342	59	116	436	84	80	517	62

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	55.5	25.5	0.0	0.0	0.0	0.0				
		Yellow	3.5	3.5	0.0	0.0	0.0	0.0				
		Red	1.0	1.0	0.0	0.0	0.0	0.0				

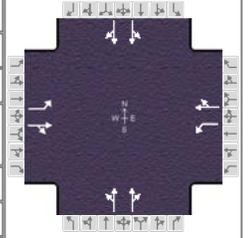
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		8		4		6		2
Case Number		6.0		6.0		5.0		6.0
Phase Duration, s		30.0		30.0		60.0		60.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		3.3		3.3		0.0		0.0
Queue Clearance Time (g _s), s		27.5		27.5				
Green Extension Time (g _e), s		0.0		0.0		0.0		0.0
Phase Call Probability		1.00		1.00				
Max Out Probability		1.00		1.00				

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	3	8	18	7	4	14	1	6	16	5	2	12
Adjusted Flow Rate (v), veh/h	74	589		60	436		126	474	91	87	629	
Adjusted Saturation Flow Rate (s), veh/h/ln	968	1836		840	1851		809	1900	1610	935	1864	
Queue Service Time (g _s), s	5.6	25.5		0.0	19.9		9.6	11.5	2.1	4.7	17.6	
Cycle Queue Clearance Time (g _c), s	25.5	25.5		25.5	19.9		27.2	11.5	2.1	16.2	17.6	
Green Ratio (g/C)	0.28	0.28		0.28	0.28		0.62	0.62	0.62	0.62	0.62	
Capacity (c), veh/h	141	520		80	524		421	1172	993	537	1150	
Volume-to-Capacity Ratio (X)	0.526	1.132		0.747	0.831		0.300	0.404	0.092	0.162	0.547	
Back of Queue (Q), ft/ln (95 th percentile)	76.6	819.9		87.9	381.4		85.8	196.7	30.5	46	274.8	
Back of Queue (Q), veh/ln (95 th percentile)	3.1	32.8		3.5	15.3		3.4	7.9	1.2	1.8	11.0	
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d ₁), s/veh	42.7	32.3		45.0	30.2		17.9	8.8	7.0	12.9	10.0	
Incremental Delay (d ₂), s/veh	1.8	81.3		28.5	10.3		1.8	1.0	0.2	0.6	1.9	
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Control Delay (d), s/veh	44.5	113.6		73.5	40.5		19.7	9.8	7.2	13.6	11.9	
Level of Service (LOS)	D	F		E	D		B	A	A	B	B	
Approach Delay, s/veh / LOS	105.9	F		44.5	D		11.3	B		12.1	B	
Intersection Delay, s/veh / LOS	42.3						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.28	B	1.92	B	1.87	B	1.87	B
Bicycle LOS Score / LOS	1.58	B	1.31	A	1.63	B	1.67	B

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #4	File Name	04AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	28	162	73	70	167	38	111	618	28	22	579	19

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	33.9	23.2	19.4	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

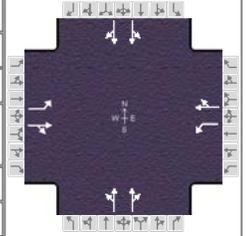
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		38.4		38.4		27.7		23.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g _s), s						21.9		18.2
Green Extension Time (g _e), s		0.0		0.0		1.3		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.10		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	30	255		76	223		431		392	354		320
Adjusted Saturation Flow Rate (s), veh/h/ln	1176	1799		1142	1839		1874		1874	1894		1878
Queue Service Time (g _s), s	1.7	9.3		4.7	7.7		19.9		17.7	16.2		14.5
Cycle Queue Clearance Time (g _c), s	9.4	9.3		14.0	7.7		19.9		17.7	16.2		14.5
Green Ratio (g/C)	0.38	0.38		0.38	0.38		0.26		0.26	0.22		0.22
Capacity (c), veh/h	421	677		392	692		483		483	409		406
Volume-to-Capacity Ratio (X)	0.072	0.377		0.194	0.322		0.892		0.812	0.866		0.789
Back of Queue (Q), ft/ln (95 th percentile)	22.3	180.9		60.7	153.3		381		324.7	297.5		267
Back of Queue (Q), veh/ln (95 th percentile)	0.9	7.2		2.4	6.1		15.2		13.0	11.9		10.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	23.3	20.4		25.5	19.9		32.2		31.4	34.0		33.3
Incremental Delay (d ₂), s/veh	0.3	1.6		1.1	1.2		10.4		4.5	2.2		1.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	23.6	22.0		26.6	21.1		42.6		35.9	36.2		34.7
Level of Service (LOS)	C	C		C	C		D		D	D		C
Approach Delay, s/veh / LOS	22.2	C		22.5	C		39.4		D	35.5		D
Intersection Delay, s/veh / LOS	33.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.93	B	1.95	B
Bicycle LOS Score / LOS	0.96	A	0.98	A	1.17	A	1.04	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California / Independence	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersection #4	File Name	04PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	29	146	35	31	122	34	52	534	31	9	593	14

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	37.8	19.2	19.5	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

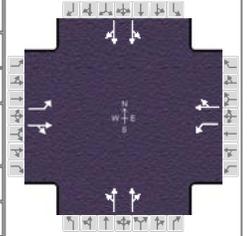
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		42.3		42.3		24.0		23.7
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.0
Queue Clearance Time (g _s), s						18.2		18.1
Green Extension Time (g _e), s		0.0		0.0		1.2		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	32	197		34	170		353		318	352		318
Adjusted Saturation Flow Rate (s), veh/h/ln	1235	1836		1205	1828		1885		1864	1897		1884
Queue Service Time (g _s), s	1.5	6.3		1.7	5.3		16.2		14.5	16.1		14.4
Cycle Queue Clearance Time (g _c), s	6.8	6.3		7.9	5.3		16.2		14.5	16.1		14.4
Green Ratio (g/C)	0.42	0.42		0.42	0.42		0.22		0.22	0.21		0.21
Capacity (c), veh/h	526	772		503	769		408		403	405		402
Volume-to-Capacity Ratio (X)	0.060	0.255		0.067	0.221		0.865		0.788	0.869		0.791
Back of Queue (Q), ft/ln (95 th percentile)	20.2	120.6		22.1	102		296.6		266	304.7		266.4
Back of Queue (Q), veh/ln (95 th percentile)	0.8	4.8		0.9	4.1		11.9		10.6	12.2		10.7
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	18.9	16.9		19.5	16.7		34.0		33.3	34.2		33.5
Incremental Delay (d ₂), s/veh	0.2	0.8		0.3	0.7		2.2		1.3	4.5		1.3
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	19.1	17.7		19.8	17.3		36.2		34.6	38.7		34.8
Level of Service (LOS)	B	B		B	B		D		C	D		C
Approach Delay, s/veh / LOS	17.9	B		17.7	B		35.5	D		36.9	D	
Intersection Delay, s/veh / LOS	31.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	0.86	A	0.82	A	1.04	A	1.04	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	California / Ardmore	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #5	File Name	05AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	71	243	113	52	149	44	37	681	29	40	558	77

Signal Information														
Cycle, s	90.0	Reference Phase	2											
Offset, s	0	Reference Point	End											
Uncoordinated	No	Simult. Gap E/W	On	Green	32.3	21.1	23.0	0.0	0.0	0.0				
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
				Red	1.0	1.0	1.0	0.0	0.0	0.0				

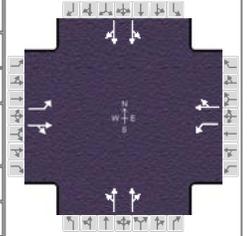
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		36.8		36.8		27.5		25.6
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.0		3.1
Queue Clearance Time (g _s), s						21.5		19.9
Green Extension Time (g _e), s		0.0		0.0		1.5		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.03

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	77	387		57	210		427		385	391		343
Adjusted Saturation Flow Rate (s), veh/h/ln	1190	1797		1012	1825		1891		1872	1889		1820
Queue Service Time (g _s), s	4.5	15.8		4.3	7.5		19.5		17.3	17.9		16.0
Cycle Queue Clearance Time (g _c), s	12.0	15.8		20.2	7.5		19.5		17.3	17.9		16.0
Green Ratio (g/C)	0.36	0.36		0.36	0.36		0.26		0.26	0.23		0.23
Capacity (c), veh/h	409	646		266	656		484		479	444		428
Volume-to-Capacity Ratio (X)	0.189	0.599		0.213	0.320		0.883		0.803	0.880		0.803
Back of Queue (Q), ft/ln (95 th percentile)	60.9	286.6		52.6	148.2		344.6		305.2	341.6		288
Back of Queue (Q), veh/ln (95 th percentile)	2.4	11.5		2.1	5.9		13.8		12.2	13.7		11.5
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	25.2	23.5		31.8	20.9		32.2		31.4	33.2		32.5
Incremental Delay (d ₂), s/veh	1.0	4.1		1.8	1.3		2.6		1.2	7.4		3.0
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	26.2	27.6		33.6	22.2		34.8		32.6	40.6		35.5
Level of Service (LOS)	C	C		C	C		C		C	D		D
Approach Delay, s/veh / LOS	27.4	C		24.6	C		33.8		C	38.2		D
Intersection Delay, s/veh / LOS	32.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.11	B	2.11	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.25	A	0.93	A	1.16	A	1.09	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	California / Ardmore	Analysis Year	2021	Analysis Period	1 > 17:00
Intersection	Intersection #5	File Name	05PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	30	213	93	17	103	20	22	573	37	47	576	35

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	36.1	20.5	19.9	0.0	0.0	0.0				
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
		Red	1.0	1.0	1.0	0.0	0.0	0.0				

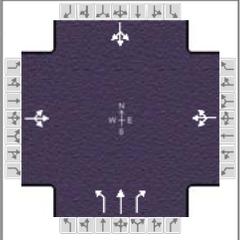
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		12.0		12.0
Phase Duration, s		40.6		40.6		24.4		25.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						18.6		19.3
Green Extension Time (g _e), s		0.0		0.0		1.3		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	33	333		18	134		363		324	377		339
Adjusted Saturation Flow Rate (s), veh/h/ln	1276	1801		1064	1846		1894		1859	1887		1862
Queue Service Time (g _s), s	1.5	12.2		1.2	4.2		16.6		14.8	17.3		15.4
Cycle Queue Clearance Time (g _c), s	5.7	12.2		13.4	4.2		16.6		14.8	17.3		15.4
Green Ratio (g/C)	0.40	0.40		0.40	0.40		0.22		0.22	0.23		0.23
Capacity (c), veh/h	533	723		363	741		418		410	430		424
Volume-to-Capacity Ratio (X)	0.061	0.460		0.051	0.180		0.868		0.791	0.876		0.798
Back of Queue (Q), ft/ln (95 th percentile)	21.1	225.3		14.1	81.8		302.9		269.8	328.9		283.1
Back of Queue (Q), veh/ln (95 th percentile)	0.8	9.0		0.6	3.3		12.1		10.8	13.2		11.3
Queue Storage Ratio (RQ) (95 th percentile)	0.00	0.00		0.00	0.00		0.00		0.00	0.00		0.00
Uniform Delay (d ₁), s/veh	19.2	19.8		24.7	17.4		33.8		33.1	33.5		32.8
Incremental Delay (d ₂), s/veh	0.2	2.1		0.3	0.5		2.2		1.3	6.5		2.4
Initial Queue Delay (d ₃), s/veh	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Control Delay (d), s/veh	19.4	21.9		24.9	17.9		36.0		34.4	40.0		35.2
Level of Service (LOS)	B	C		C	B		D		C	D		D
Approach Delay, s/veh / LOS	21.6	C		18.8	B		35.2	D		37.7	D	
Intersection Delay, s/veh / LOS	32.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.95	B	1.93	B
Bicycle LOS Score / LOS	1.09	A	0.74	A	1.05	A	1.08	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #10	File Name	10AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	114	412	56	61	278	8	49	334	153	21	312	111

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	51.4	29.6	0.0	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	0.0	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	0.0	0.0	0.0	0.0								

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.9		55.9		34.1		34.1
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						29.2		24.4
Green Extension Time (g _e), s		0.0		0.0		0.5		1.6
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		0.44

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	633			377			53	363	166	483		
Adjusted Saturation Flow Rate (s), veh/h/ln	1665			1602			947	1900	1610	1778		
Queue Service Time (g _s), s	13.0			0.0			4.9	14.3	7.0	8.1		
Cycle Queue Clearance Time (g _c), s	22.7			9.7			27.2	14.3	7.0	22.4		
Green Ratio (g/C)	0.57			0.57			0.33	0.33	0.33	0.33		
Capacity (c), veh/h	999			963			157	624	529	626		
Volume-to-Capacity Ratio (X)	0.633			0.392			0.339	0.581	0.314	0.771		
Back of Queue (Q), ft/ln (95 th percentile)	336.3			185.1			51.9	263	116.8	385.7		
Back of Queue (Q), veh/ln (95 th percentile)	13.5			7.4			2.1	10.5	4.7	15.4		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.9			10.3			40.2	25.1	22.6	27.7		
Incremental Delay (d ₂), s/veh	3.1			1.2			0.5	0.8	0.1	5.0		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	16.0			11.5			40.7	25.9	22.7	32.6		
Level of Service (LOS)	B			B			D	C	C	C		
Approach Delay, s/veh / LOS	16.0	B		11.5	B		26.3	C		32.6	C	
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.53	B	1.11	A	1.45	A	1.28	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of Huntington Park / City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Santa Ana	Analysis Year	2021	Analysis Period	1 > 16:00
Intersection	Intersection #10	File Name	10PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	71	409	72	96	354	10	62	290	115	10	385	111

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On	Green	50.5	30.5	0.0	0.0	0.0	0.0	0.0	0.0
				Yellow	3.5	3.5	0.0	0.0	0.0	0.0	0.0	0.0
				Red	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0

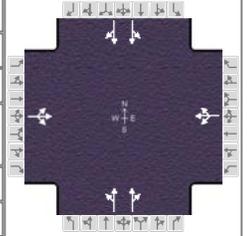
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		5.0		8.0
Phase Duration, s		55.0		55.0		35.0		35.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g _s), s						32.5		27.7
Green Extension Time (g _e), s		0.0		0.0		0.0		0.9
Phase Call Probability						1.00		1.00
Max Out Probability						1.00		1.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	600			500			67	315	125	550		
Adjusted Saturation Flow Rate (s), veh/h/ln	1717			1544			880	1900	1610	1818		
Queue Service Time (g _s), s	1.6			0.0			4.8	11.8	5.0	6.9		
Cycle Queue Clearance Time (g _c), s	19.9			18.3			30.5	11.8	5.0	25.7		
Green Ratio (g/C)	0.56			0.56			0.34	0.34	0.34	0.34		
Capacity (c), veh/h	1009			915			126	644	546	657		
Volume-to-Capacity Ratio (X)	0.595			0.547			0.533	0.490	0.229	0.837		
Back of Queue (Q), ft/ln (95 th percentile)	314.6			267.5			70.5	223.1	83.7	458.5		
Back of Queue (Q), veh/ln (95 th percentile)	12.6			10.7			2.8	8.9	3.3	18.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00	0.00	0.00	0.00		
Uniform Delay (d ₁), s/veh	12.9			12.2			43.4	23.6	21.3	28.1		
Incremental Delay (d ₂), s/veh	2.6			2.3			2.3	0.2	0.1	8.8		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0	0.0	0.0	0.0		
Control Delay (d), s/veh	15.5			14.6			45.6	23.8	21.4	37.0		
Level of Service (LOS)	B			B			D	C	C	D		
Approach Delay, s/veh / LOS	15.5	B		14.6	B		26.1	C		37.0	D	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.24	B	1.66	B	1.69	B	1.69	B
Bicycle LOS Score / LOS	1.48	A	1.31	A	1.33	A	1.40	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Otis / Independence	Analysis Year	2021	Analysis Period	1 > 7:15
Intersection	Intersection #11	File Name	11AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	41	104	113	34	29	9	109	562	86	41	494	39

Signal Information													
Cycle, s	90.0	Reference Phase	2										
Offset, s	0	Reference Point	End										
Uncoordinated	No	Simult. Gap E/W	On	Green	34.5	18.3	23.8	0.0	0.0	0.0			
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0			
				Red	1.0	1.0	1.0	0.0	0.0	0.0			

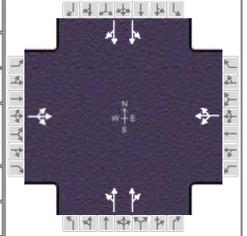
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		39.0		39.0		28.3		22.8
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						22.1		17.2
Green Extension Time (g _e), s		0.0		0.0		1.7		1.1
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.01

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	280			78			437			295		
Adjusted Saturation Flow Rate (s), veh/h/ln	1697			1422			1875			1887		
Queue Service Time (g _s), s	0.5			0.0			20.1			15.2		
Cycle Queue Clearance Time (g _c), s	10.5			2.5			20.1			15.2		
Green Ratio (g/C)	0.38			0.38			0.26			0.20		
Capacity (c), veh/h	696			604			495			383		
Volume-to-Capacity Ratio (X)	0.403			0.130			0.882			0.860		
Back of Queue (Q), ft/ln (95 th percentile)	197.7			50.3			351.8			287.1		
Back of Queue (Q), veh/ln (95 th percentile)	7.9			2.0			14.1			11.5		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	20.4			17.9			31.8			34.6		
Incremental Delay (d ₂), s/veh	1.7			0.4			2.1			3.0		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	22.1			18.3			33.9			37.6		
Level of Service (LOS)	C			B			C			D		
Approach Delay, s/veh / LOS	22.1	C		18.3	B		33.1	C		36.6	D	
Intersection Delay, s/veh / LOS	31.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	0.95	A	0.62	A	1.17	A	1.00	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Independence	Analysis Year	2021	Analysis Period	1 > 16:45
Intersection	Intersection #11	File Name	11PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Demand (v), veh/h	25	51	65	54	58	16	124	503	49	19	533	31

Signal Information																		
Cycle, s	90.0	Reference Phase	2															
Offset, s	0	Reference Point	End															
Uncoordinated	No	Simult. Gap E/W	On	Green	36.8	21.2	18.5	0.0	0.0	0.0	1		2		3		4	
Force Mode	Fixed	Simult. Gap N/S	On	Yellow	3.5	3.5	3.5	0.0	0.0	0.0	5		6		7		8	
				Red	1.0	1.0	1.0	0.0	0.0	0.0	5		6		7		8	

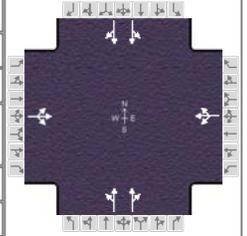
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		6		2		4		8
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		41.3		41.3		25.7		23.0
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						20.0		17.3
Green Extension Time (g _e), s		0.0		0.0		1.2		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.04		0.00

Movement Group Results	EB			WB			NB			SB		
	L	T	R	L	T	R	L	T	R	L	T	R
Approach Movement												
Assigned Movement	1	6	16	5	2	12	7	4	14	3	8	18
Adjusted Flow Rate (v), veh/h	153			139			386			300		
Adjusted Saturation Flow Rate (s), veh/h/ln	1669			1576			1867			1862		
Queue Service Time (g _s), s	0.0			0.0			18.0			13.7		
Cycle Queue Clearance Time (g _c), s	5.1			4.6			18.0			13.7		
Green Ratio (g/C)	0.41			0.41			0.24			0.21		
Capacity (c), veh/h	729			701			440			383		
Volume-to-Capacity Ratio (X)	0.210			0.198			0.878			0.782		
Back of Queue (Q), ft/ln (95 th percentile)	94.3			87.8			342.1			257.1		
Back of Queue (Q), veh/ln (95 th percentile)	3.8			3.5			13.7			10.3		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	17.2			17.0			33.2			33.8		
Incremental Delay (d ₂), s/veh	0.7			0.6			7.4			1.3		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	17.9			17.7			40.5			35.2		
Level of Service (LOS)	B			B			D			D		
Approach Delay, s/veh / LOS	17.9	B		17.7	B		38.1	D		35.9	D	
Intersection Delay, s/veh / LOS	33.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.71	B	1.73	B
Bicycle LOS Score / LOS	0.74	A	0.72	A	1.09	A	1.01	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - AM	PHF	0.92
Urban Street	Otis / Ardmore	Analysis Year	2021	Analysis Period	1 > 7:00
Intersection	Intersection #12	File Name	12AM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	112	5	281	3	2	1	82	641	5	2	562	71

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
	Green	34.0	20.0	22.5	0.0	0.0	0.0					
	Yellow	3.5	3.5	3.5	0.0	0.0	0.0					
	Red	1.0	1.0	1.0	0.0	0.0	0.0					

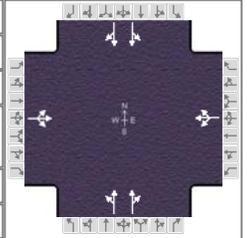
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		38.5		38.5		27.0		24.5
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						21.0		18.8
Green Extension Time (g _e), s		0.0		0.0		1.5		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	433			7			413			368		
Adjusted Saturation Flow Rate (s), veh/h/ln	1575			1164			1880			1895		
Queue Service Time (g _s), s	17.0			0.0			19.0			16.8		
Cycle Queue Clearance Time (g _c), s	21.1			0.2			19.0			16.8		
Green Ratio (g/C)	0.38			0.38			0.25			0.22		
Capacity (c), veh/h	646			499			470			422		
Volume-to-Capacity Ratio (X)	0.670			0.013			0.878			0.871		
Back of Queue (Q), ft/ln (95 th percentile)	328.2			4.2			337.1			322.7		
Back of Queue (Q), veh/ln (95 th percentile)	13.1			0.2			13.5			12.9		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	23.9			17.5			32.4			33.8		
Incremental Delay (d ₂), s/veh	5.5			0.0			2.1			5.6		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	29.3			17.6			34.5			39.3		
Level of Service (LOS)	C			B			C			D		
Approach Delay, s/veh / LOS	29.3	C		17.6	B		33.7	C		37.4	D	
Intersection Delay, s/veh / LOS	34.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.20	A	0.50	A	1.14	A	1.06	A

HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LLG Engineers			Duration, h	0.25
Analyst	AS	Analysis Date	Dec 13, 2019	Area Type	Other
Jurisdiction	City of South Gate	Time Period	Future with Project - PM	PHF	0.92
Urban Street	Otis / Ardmore	Analysis Year	2021	Analysis Period	1 > 16:30
Intersection	Intersection #12	File Name	12PM - Future with Project.xus		
Project Description	7801-7835 Otis Avenue Charter School				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	71	2	266	4	2	1	61	601	1	1	609	43

Signal Information												
Cycle, s	90.0	Reference Phase	2									
Offset, s	0	Reference Point	End									
Uncoordinated	No	Simult. Gap E/W	On									
Force Mode	Fixed	Simult. Gap N/S	On									
		Green	35.5	20.4	20.7	0.0	0.0	0.0				
		Yellow	3.5	3.5	3.5	0.0	0.0	0.0				
		Red	1.0	1.0	1.0	0.0	0.0	0.0				

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		8.0		8.0		12.0		12.0
Phase Duration, s		40.0		40.0		25.2		24.9
Change Period, (Y+R _c), s		4.5		4.5		4.5		4.5
Max Allow Headway (MAH), s		0.0		0.0		3.1		3.1
Queue Clearance Time (g _s), s						19.3		19.2
Green Extension Time (g _e), s		0.0		0.0		1.4		1.2
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	368			8			376			376		
Adjusted Saturation Flow Rate (s), veh/h/ln	1591			1171			1883			1899		
Queue Service Time (g _s), s	8.7			0.0			17.3			17.2		
Cycle Queue Clearance Time (g _c), s	16.1			0.2			17.3			17.2		
Green Ratio (g/C)	0.39			0.39			0.23			0.23		
Capacity (c), veh/h	675			524			432			436		
Volume-to-Capacity Ratio (X)	0.546			0.015			0.869			0.874		
Back of Queue (Q), ft/ln (95 th percentile)	261.5			4.8			314.5			330.2		
Back of Queue (Q), veh/ln (95 th percentile)	10.5			0.2			12.6			13.2		
Queue Storage Ratio (RQ) (95 th percentile)	0.00			0.00			0.00			0.00		
Uniform Delay (d ₁), s/veh	21.3			16.6			33.4			32.6		
Incremental Delay (d ₂), s/veh	3.2			0.1			2.1			6.1		
Initial Queue Delay (d ₃), s/veh	0.0			0.0			0.0			0.0		
Control Delay (d), s/veh	24.5			16.6			35.5			39.7		
Level of Service (LOS)	C			B			D			D		
Approach Delay, s/veh / LOS	24.5	C		16.6	B		34.7	C		37.5	D	
Intersection Delay, s/veh / LOS	33.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.10	B	2.10	B	1.73	B	1.70	B
Bicycle LOS Score / LOS	1.10	A	0.50	A	1.08	A	1.07	A



AGENDA REPORT

MEETING DATE: February 24, 2020

TO: Honorable Chair & Planning Commission Members

FROM: Salvador Lopez, Interim Community Development Director

Subject: Development Review Permit No. 41-518, to allow the construction of a 5-unit multifamily residential development located at 5306 Clara Street (APN 6225-027-013).

RECOMMENDATION:

Staff recommends that the Planning Commission of the City of Cudahy (the "City"):

1. Approve Development Review Permit No. 41-518 to allow the design, site layout, and construction of a 5-unit multifamily residential development;
2. Approve Conditional Use Permit 38-373 to permit tandem parking.

BACKGROUND/PROJECT DESCRIPTION:

The subject property is located on an approximately 17,013 square foot lot located at 5306 Clara Street in the City of Cudahy in the Medium Density Residential (MDR) Zone. The site is currently developed with one duplex consisting of 1,644 feet with four bedrooms and two bathrooms, according to the Los Angeles County Assessor's Office. The existing structure is proposed for demolition to accommodate the proposed new multi-family residential construction. The immediate area is developed with a mix of multi-family and single-family residential land uses.

The applicant, Dhiren Shah, proposes to construct a new 5-unit apartment complex. According to the plans submitted to the city's Planning Division the development will consist of the demolition of the existing duplex on site, and the construction of a two-story, six-bedroom, 4.5-bathroom single family home, as well as two two-story duplex units. Each of the duplex units will have three bedrooms and 2.5 bathrooms for a project total of 8,052 square feet. Each duplex unit will include a two-car garage while the single-family home will include a three-car garage. In addition, three guest parking spaces will be provided. The site will be accessed from a common 304-foot long, 20-foot wide driveway that will connect to Clara Street providing access to both residents and emergency vehicles. This has been reviewed and approved by the Los Angeles County Fire Department.

The project architecture is modern contemporary. Treatments incorporate a blend of contemporary and traditional architectural forms and details which include a flat façade, hip style roof, plaster walls, and articulated facades such as inset windows and doors, offset/projected wall features and recessed entryways. Proposed building colors incorporate an earth-tone palette with a dark grey smooth stucco finish, brown trims, and decorative veneers.

The buildings would be set back from the eastern side of the property by five feet, the rear setback by ten feet, the western setback by five feet, and the front setback by 15 feet. A six-foot tall concrete-masonry-unit (CMU) wall would be constructed along the entire perimeter of the property, except the front setback area which will have 2 feet, 6-inch masonry wall. A preliminary landscape plan has been submitted showing landscape areas on the buildings' perimeter and in interior open space areas and within the front yard setback. A more detailed plan will be submitted with the formal plan check submittal. Project lighting would consist of security lighting and wall lights on the building perimeters, using LED fixtures. All lighting would be designed to avoid light spillage to neighboring properties.

The table below provides floor area detailed information for the proposed units:

Number of units	Number of Bedrooms	Habitable Area
5	18 total	8,052 sq. ft.

The development also includes private open spaces for each unit totaling 1,252 square feet. A series of common open spaces are provided throughout totaling 1,400 square feet.

A minimum number of on-site parking spaces is required for each residential unit, based on the number of bedrooms, inclusive of guest parking spaces. The table below identifies the number of spaces required by the zoning code based on the bedroom count.

Type of unit	# of spaces required	# of spaces provided
3 bedrooms	2 spaces	2 spaces
6 bedrooms	3 spaces	3 spaces

Parking

A total of 14 accessible parking spaces are provided throughout the site. A total of 11 spaces are in garages associated with specific units. The remaining three are guest parking spaces. In addition, there are two tandem parking spaces which require approval via a Conditional Use Permit, the required findings for which are discussed below. The proposed tandem parking would not affect on- or off-site circulation, open spaces, landscaping, fencing or walls, adjacent properties, or the health and well-being of any portion of the City of Cudahy.

ANALYSIS & DISCUSSION:

General Plan and Zoning. The General Plan designates the site and surrounding area as "Medium Density Residential" as noted above, and the property's zoning is Medium Density Residential (MDR). Table 1 below shows the project site and surrounding area's zoning and land uses.

The MDR Zone incorporates higher-density, multi-story, multi-family residential areas at a density of 1,742 square feet per unit, or approximately 25 dwelling units per acre, and requires 180 square feet of common open space per unit, and 150 square feet of private open space per unit. The MDR Zone restricts building height to three stories or 45 feet, whichever is less, and requires minimum habitable floor areas of 700 square feet for one-bedroom units, 900 square feet for 2-bedroom units, and 1,100 square feet for three-bedroom units (CMC § 20.16.030).

**Table 1
Zoning and Land Use**

	ZONING	LAND USE
PROJECT SITE	MDR	Multifamily Residential
NORTH	MDR	Single and Multifamily Residential
EAST	MDR	Single and Multifamily Residential
SOUTH	MDR	Single and Multifamily Residential
WEST	MDR	Single and Multifamily Residential

The proposed project meets General Plan and Zoning standards for use (multiple-family residential), building height, and front, rear, and side setbacks. The project plans show that the individual units' habitable area and private open space areas either meet or exceed zoning standards. The project proposes a 304-foot long, 20-foot wide driveway as required by the Los Angeles County Fire Department. Table 2 below compares the project's characteristics with development standards.

**Table 2
Development Standards: Required vs. Proposed Project**

	General Plan	Zoning	Density	Height	Setbacks	Min Floor Area (2 BR units)	Parking	Private Open Space per unit	Common Open Space
Required	MDR	MDR	1,742 SF/DU (25 du/acre) 35 du/acre maximum w/o density bonus	3 stories or 45 feet	Front: 15 ft Side: 5 ft. Rear: 10 ft.	900 SF	1.5 - 2 spaces/unit 0.5 guest space/unit	150 SF	280 SF/Unit = 1,400 SF
Proposed	MDR	MDR	5 dwelling units	2 stories	Front: 15 ft. Side: 5 ft. Rear: 10-12 ft.	1,000 SF	2-3 spaces/unit 0.6 guest space/unit	250 SF	1,400 SF common area plus front and rear landscaped areas
Consistent?	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 2 shows that the proposed development complies strictly with all applicable development standards for development of new multifamily developments in the MDR zone.

City of Cudahy General Plan Land Use and Housing Element Provisions. The following provisions relate to the project's consistency with the City's policies for affordable housing:

- **Land Use Element Policy 2.8.** The City of Cudahy will provide adequate housing for various family sizes and income levels by allowing for different densities of development.

Analysis: The project's proposed increased density beyond existing conditions would provide additional multi-family housing for the City. This is consistent with Policy 2.8, which allows for "different densities of development" as the project would replace single-family residential with relatively affordable and denser multi-family development.

- **Housing Element Goal 2.** The City of Cudahy will promote affordable housing and shelter for all economic segments of the community.

- **Housing Element Policy 2.1.** The City of Cudahy will promote all State, regional and local practices and plans that support housing availability for all economic segments of the population.

Analysis: The project would provide additional housing in the City, increasing supply and providing a more affordable option to residents than the current use of single-family.

- **Housing Element Policy 2.5.** The City of Cudahy will encourage variety in the supply of housing at costs affordable to the various income levels of the population.

Analysis: The project would supply new multifamily units that exceed the minimum habitable floor area.

Compatibility with surrounding uses. The proposed multiple-family residential project is generally compatible and consistent with surrounding uses. Single and multiple-family residential uses lie on all sides of the project site, in both one and two-story structures. The building height of two stories does not exceed the MDR zone's 45-foot or three-story maximum height. The placement of the structure on the site, facing a central driveway and a front yard setback of 15 feet, reduces the project's visual bulk. The subject site is elongated and oriented north-south perpendicular to its access roads. This will also serve to limit any aesthetic concerns about the proposed development. The proposed rear setback of 10 feet does not intrude on residential uses.

The Los Angeles County Fire Department's Land Development Division reviewed the proposed plan for access requirements and has tentatively approved the proposed access (20-foot wide driveway) to the subject property and the proposed units, with conditions of approval.

REQUIRED FINDINGS:

DEVELOPMENT REVIEW PERMIT

CMC § 20.84.210, Basis for Approval or Denial of a Development Review Permit.

- **20.84.210(a) The project is consistent with the City of Cudahy General Plan, any applicable specific plan, and any plan of another governmental agency made applicable by statute or ordinance.**

Support for Finding: The project is compatible with the City of Cudahy's General Plan because it proposes a multiple-family residential project in the Medium-Density Residential General Plan designation and the Medium-Density Residential zone, at a density allowable under the Cudahy zoning code.

- **20.84.210(b) The height, bulk, and other design features of structures are in proportion to the building site, and external features are balanced and unified to present a harmonious appearance.**

Support for Finding: The proposed development's structure is two stories in height. There is sufficient area in the 15-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences that also face the street. Accordingly, the

project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.

- **20.84.210(c) The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses.**

Support for Finding: The existing surrounding properties include single story and two-story single-family and multi-family residences. The proposed development includes five multifamily residential units, consistent with the height, bulk, and other design features found in the surrounding area. The proposed surface articulations, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.

- **20.84.210(d) The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development.**

Support for Finding: The proposed site layout presents a balanced, axial plan that relates to similar structures along Clara Street. The development's orientation beyond the setback and the common driveway helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for guest parking, landscaping, including the front setback, the rear setback, the private open space and common areas. The common driveway permits good visibility along the length of the project interior and will have security lighting for safety.

- **20.84.210(e) The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features.**

Support for Finding: The proposed development requires demolition of the existing duplex on the site. The site is urbanized, flat, and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs, which would replace any that would be removed.

- **20.84.210(f) The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site.**

Support for Finding: The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.

- **20.84.210(g) Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner which is in harmony with the design of the structures and grounds.**

Support for Finding: There are no proposed exterior mechanical equipment, machinery, or service areas except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning

code requirements for multi-family developments. Other mechanical equipment must comply with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.

- **20.84.210(h) The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character of such property.**

Support for Finding: The proposed project would re-develop a site that lies between occupied single and multiple-family residences. By introducing new, up-to-date residences with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

CONDITIONAL USE PERMIT – TANDEM PARKING

Basis for Approval or Denial of a Conditional Use Permit for a Tandem Parking:

- **20.83.330 (A).** Consistency. The use shall be consistent with the general plan and consistent with the integrity and character of the zone in which it is to be located.

Support for Finding: The proposed tandem parking is consistent with both the residential land use and zoning for the subject site identified and discussed above. This feature ensures that adequate parking is provided for both residents and visitors and is positioned in such a way so as to not interfere with site maneuverability or emergency access.

- **20.83.330 (B).** Site suitability. The site for a proposed conditional use is adequate in size and shape to accommodate the yards, walls and fences, parking and loading, landscaping, and other development standards prescribed in this zoning code, or required by the Planning Commission, City Council, or other authorized agent in order to integrate the conditional use with the land and uses in the neighborhood.

Support for Finding: The tandem parking proposed does not affect yards, fences, and walls on the site and is designed as tandem parking specifically to avoid impacting open spaces, landscaped areas, or any other aspect of the project that could run counter to the development standards for the property's zoning.

- **20.83.330 (C).** Neighborhood compatibility. The Planning Commission shall consider the nature, condition, and development of adjacent uses, buildings, and structures and the effect the proposed conditional use may have on such adjacent uses, buildings, and structures

Support for Finding: The tandem parking proposed does not affect the nature, condition, or development of adjacent uses or structures. It is an internal parking arrangement that allows the project to comply with parking requirements for the zone and could not affect current or future development in the surrounding neighborhood.

- **20.83.330 (D).** Access and circulation. The site for a proposed conditional use should relate to streets and highways adequate in width and pavement to carry the kind and quantity of traffic such use would generate. Adequate provisions for public access are available to serve the use.

Support for Finding: The tandem parking would not affect site access or internal circulation. It is designed and included by the applicant in the location indicated on the development plans specially to avoid impacts on circulation, including the driveway length and width approved by the fire department.

- **20.83.330 (E).** Utilities and services. Adequate provisions for water, sewer, and public utilities and services are available to ensure that the use will not be detrimental to public health and safety.

Support for Finding: The site is adequately served by all utilities. The proposed project does not affect infrastructure provision, and the CUP in this case is for tandem parking. It does not have the potential to affect utilities or services on the site or its surrounding neighborhood.

- **20.83.330 (F).** Safety and welfare. The use will not be detrimental to the public interest, health, safety, convenience, or welfare

Support for Finding: No aspect of tandem parking has the ability to affect public health, safety, or welfare. It is an internal parking arrangement that would have no effects on the public either on- or off-site.

Additional Findings for Approval:

- **There are adequate provisions for public and emergency vehicle access, fire protection, sanitation, water, and public utilities and services to ensure that the proposed development would not be detrimental to public health and safety.**

Support for Finding: Planning staff and the Los Angeles County Fire Department reviewed the site plan. With application of the conditions of approval, the proposed site plan complies with the City's Zoning Code and Fire Department requirements related to vehicle access, fire protection, sanitation, water, and public utilities and services.

CEQA (CALIFORNIA ENVIRONMENTAL QUALITY ACT):

Based upon the information received and Staff's assessment, the proposed Project is categorically exempt from California Environmental Quality Act ("CEQA") pursuant to Section 15332 (Class 3, In-Fill Development Projects). Approval of the project satisfies the requirements under this exemption. The project is consistent with the General Plan in that it facilitates and encourages diversity in housing types. The applicant proposes seven apartment units, which adds additional housing options in the City. The project is further consistent with the Housing Element of the General Plan in that it contributes units towards the required Regional Housing Needs Assessment (RHNA) requirement. Finally, the proposed project is consistent with the General Plan of the City as it meets a) medium-density residential development; b) is located in the City on a site of less than five acres; c) the site has no value as a habitat for endangered species, as it is in an urbanized area and was previously developed with a single family home; d) there are no anticipated impacts to traffic, noise, or air quality as the land use at the site is not substantially changing, and e) is adequately served by utilities and public services. The Categorical Exemption findings are supported by the following studies (attached): air quality/greenhouse gas emissions

(Attachment 5) and traffic (Attachment 6). The air quality/greenhouse gas emissions study concludes that no impacts to the environment would occur as a result of the proposed project because neither the construction nor operations phases of the project would exceed SCAQMD thresholds. This is detailed in the attached report and is based on CalEEMod results. In addition, GHG emissions are expected to decrease at the project site by 12%, which exceeds CARB's four to eight-percent goals. The findings regarding potential traffic impacts are supported by the attached traffic study which concludes that no impacts would occur upon project implementation due to the projected daily trip generation of 39 being less than the adopted County and Metro thresholds. In addition, no significant impacts regarding Aesthetics thresholds as identified by CEQA would occur. The project site is in an urbanized area, is not located within or near a scenic highway, contains no significant rocks or outcroppings, and would not impede any scenic views into or out of the project site as the proposed development is only three stories in height and no scenic views exist from or into the project site. The site is a residential property surrounded by other residential properties, as well as commercial properties, of similar size in an urbanized area.

ATTACHMENTS:

1. Location Map
2. Proposed Development Plans
3. Resolution No. PC 20-04
4. Air Quality/Greenhouse Gas Emissions Study
5. Traffic Study

LOCATION MAP



5306 Clara Street

RESOLUTION NO. PC 20-04

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CUDAHY APPROVING DEVELOPMENT REVIEW PERMIT NO. 41-518 TO ALLOW THE CONSTRUCTION OF A 5-UNIT MULTIFAMILY RESIDENTIAL DEVELOPMENT LOCATED AT 5306 CLARA STREET. APPLICANT: DHIREN SHAH.

WHEREAS: The applicant, Dhiren Shah, requests approval of a Development Review Permit to allow the design, site layout, and the construction of a 5-unit multifamily residential development;

WHEREAS: The subject property is located at 5306 Clara Street in an area that is designated by the Cudahy General Plan and by the Cudahy Zoning Map as Medium Density Residential; and

WHEREAS: The subject property is approximately 17,013 square feet in area, and the MDR zone sets forth the maximum residential density of 1,742 square feet per acre. The base density of the parcel is 9 units, calculated by dividing the parcel area by the zone-assigned density and rounding down to the next whole number ($17,103/1,742 = 9.81$). The City of Cudahy Zoning Code mandates a maximum of 11 dwelling units per acre for properties that are less than 25,000 square feet. The proposed project complies with this density maximum as shown above.; and

WHEREAS: This matter was duly posted and set for a special public hearing for February 24, 2020 at 6:30pm consistent with the City of Cudahy's Zoning Ordinance procedures for Development Review Permits.

NOW THEREFORE, the Planning Commission of the City of Cudahy hereby resolves:

SECTION 1. The Project has been environmentally reviewed pursuant to the provisions of the California Environmental Quality Act (Public Resources Code Sections 21000, et seq ("CEQA"), the State CEQA Guidelines (California Code of Regulations, Title 14, Sections 15000, et seq), and the City's Local CEQA Guidelines. In accordance with the provisions of the California Environmental Quality Act (CEQA), an environmental analysis has been completed for this case. As a result of that analysis, it has been determined that this case will not have a significant impact upon the environment and is Exempt, pursuant to Article 12.5, Section 15195, Residential Infill Exemption, of the CEQA Guidelines and therefore, no further environmental documentation will be required.

SECTION 2. After considering the proposal on the basis for approval or denial of Development Review Permit 41.518 stated in Chapter 20 of the Cudahy Municipal Code, the Planning Commission finds as follows:

DEVELOPMENT REVIEW PERMIT 41.518

- A. The project is compatible with the City of Cudahy's General Plan because it proposes a multiple-family residential project in the Medium Density Residential General Plan designation and the Medium Density Residential zone. The MDR designation and zone set forth a residential density of up to 25 dwelling units/acre. The Medium Density Residential Zone designation sets forth a residential density of up to 25 units/acre; the MDR zone sets project density to 25 units per acre.

- B. The height, bulk, and other design features of the Project's structures are in proportion to the building site, and external features are balanced and unified so as to present a harmonious appearance. The proposed development's structure is two-stories in height, similar to other multi-story structures within the immediate neighborhood. There is sufficient area in the 15-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences that also face the street. Accordingly, the project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.
- C. The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses. The existing surrounding properties include single story and two-story single-family and multi-family residences. The proposed development includes five multifamily residential units, consistent with the height, bulk, and other design features found in the surrounding area. The proposed surface articulations, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.
- D. The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development. The proposed site layout presents a balanced, axial plan that relates to similar structures along Clara Street. The development's orientation beyond the deep setback and the common driveway helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for guest parking, landscaping, including the front setback, the rear setback, the private open space and common areas. The common driveway permits good visibility along the length of the project interior and will have security lighting for safety.
- E. The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features. The proposed development requires demolition of an existing duplex and the rest of the site is urbanized, flat and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs, which would replace those that would be removed.
- F. The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site. The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.
- G. Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner that is in harmony with the design of the structures and grounds. There are no proposed exterior mechanical equipment, machinery, or service areas except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning code requirements for multi-family developments. Other mechanical equipment must comply

with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.

- H. The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character or value of such property. The proposed project would re-develop a site that lies between occupied single and multiple-family residences. By introducing new, up-to-date residences with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

SECTION 3. After considering the proposal on the basis for approval or denial of the Conditional Use Permit 38.373 stated in Section 20 of the Cudahy Municipal Code, the Planning Commission finds as follows:

- A. The applicant has adequately demonstrated that the project's tandem parking necessitating a Conditional Use Permit is consistent with both the general plan land use designation and zoning for the subject site.
- B. The applicant has adequately demonstrated that the tandem parking aspect of the proposed project is suitable to the site as it does not impact any aspects of private or common open space, loading, landscaped areas, or fences and walls.
- C. The applicant has adequately demonstrated that the proposed tandem parking does not have the potential to affect either neighboring properties or the neighborhood as a whole, including adjacent uses, structures, or buildings.
- D. The applicant has adequately demonstrated that the amount and location of tandem parking proposed on the subject site does not have the ability to affect site access or circulation.
- E. The applicant has adequately demonstrated that no aspect of the proposed tandem parking has the ability to affect on- or off-site infrastructure with regard to water, sewer, or other public utilities.
- F. The applicant has adequately demonstrated that no aspect of the proposed tandem parking has the ability to affect the public interest, health, or welfare on adjacent properties or the surrounding neighborhood.

SECTION 4. Based upon the findings contained in this Resolution and on all other written and oral evidence in the record, the Planning Commission hereby approves Development Review Permit No. 41-518 and Conditional Use Permit No. 38-373, subject to the conditions of approval set forth below:

1. The applicant, its successors in interest, and assignees, shall indemnify, protect, defend (with legal counsel reasonably acceptable to the City), and hold harmless, the City, and any agency or instrumentality thereof, and its elected and appointed officials, officers,

employees, and agents from and against all liabilities, claims, actions, causes of action, proceedings, suits, damages, judgments, liens, levies, and disbursements (collectively, "Claims") arising out of or in any way relating to this project, any discretionary approval granted by the City related to the development of the project, or the environmental review conducted under the California Environmental Quality Act, Public Resources Code section 21000 *et seq.*, ("CEQA") for the project. If the City Attorney is required to enforce any conditions of approval, the applicant shall pay for all costs of enforcement, including attorney's fees.

2. Subcontractors hired to improve the physical structures of the building shall obtain a contractor's business license from the City Business License Department and submit proof of workers' compensation insurance to the City Building Department, before the issuance of any permits.
3. All conditions shall be binding upon the applicants, their successors and assigns, shall run with the land, shall limit and control the issuance and validity of certificate of occupancy, and shall restrict and limit the construction, location, and use and maintenance of all land and structures within the development.
4. The site shall be kept in a neat manner at all times and any landscaping shall be continuously maintained in a healthy and thriving condition.
5. Any changes in building textures, materials, and colors on the exterior walls are subject to planning approval. A developer is required to submit samples of all exterior materials for approval prior to the issuance of building permits.
6. Construction shall conform to the site plan on file with the Community Development Department and as approved by the Planning Commission.
7. The Developer shall pay into a fund for parkland fees, to be determined at the time of submitting plans into Building and Safety Plan Check, pursuant to the Quimby Act. (Government Code Section §66477).
8. The Developer shall verify in writing that there is sufficient water service for the additional dwelling units proposed. Also, the developer agrees to install any equipment, lines or other necessary improvement to ensure that there will be sufficient water service for the proposed additions.
9. A complete set of plans including the sewer, drainage, grading, and erosion control plans, which accurately depict the location of the proposed structures, driveways, and all other elements of the development, shall be submitted as part of the plan check submittal.
10. The applicant shall comply with all conditions set forth by the Los Angeles County Fire Department for this application in its letter of correspondence and on file with the City Planning Department.
11. Anti-graffiti substances shall be used on both sides of the perimeter walls of the subject property.
12. Applicant shall remove graffiti within 24 hours of application. In the event graffiti is not removed within 24 hours, the applicant grants access and indemnifies the City to enter the property to abate graffiti according to CMC Sections 15.20.150 and 15.20.

13. No motor vehicles (commercial or otherwise) shall be parked on the property except in marked parking spaces.
14. Utility equipment including and not limited to electricity, cable, or telephone equipment must be placed underground. Each unit shall have separate sewer and water lines.
15. Pursuant to the National Pollutant Discharge Elimination System (NPDES) Permit requirements, and City of Cudahy Municipal Code Section 11-2: Storm Water and Urban Runoff Pollution Control all construction projects of less than 1 acre are required to meet a minimum of water quality protection (i.e., Owner's Certification of Compliance with Minimum Requirements Form and/or Wet Weather Control Plan).
16. As part of the plan check submittal, written verification from the local water authority that there is sufficient water service for the additional dwelling units, as well as fire suppression being provided without interruption to residences.
17. A Lighting Plan shall be submitted with construction drawings to Building & Safety for plan check.
18. Landscaping and irrigation plans, which provide for adequate landscaping shall be submitted to the Community Development Department for approval as part of plan check submittal. All types of plants selected, and required watering systems for such landscaping, shall, to the extent possible, conserve water and shall be consistent with any water conservation ordinance enacted by the City.
19. All roof-mounted equipment shall be adequately and decoratively screened and shall not be visible from the street.
20. The locations of air-conditioning condensers shall be shown on the site plan and shall not be visible from the street.
21. A raised curb shall be provided along the borders of the area proposed for parking spaces and open space areas.
22. All vents shall be painted to match the color of the house stucco or wood trim.
23. All building materials and plants selected shall be comparable to the proposed development.
24. The developer shall obtain necessary permits to repair or improve any curb, gutter or sidewalk damaged due to the construction process.
25. The electrical transformer shall be adequately and decoratively screened from view. Dense landscaping shall be used as screening materials. The applicant shall provide the details with the set of building plans to illustrate this requirement.
26. The applicant shall include all general notes on the plans submitted for plan check as required. The floor plans and elevation drawings shall reflect the same information. The developer is required to check said plans for accuracy and make sure plans are drawn to scale and corrections are made as necessary prior to the issuance of permits.

27. The developer shall not deviate from any of the approved plans without prior approval from the Director of Community Development or the Planning Commission.
28. The developer shall submit a complete listing of all subcontractors used for the project. Each subcontractor shall obtain a contractor's business license from the City's Business License Department and submit proof of workers' compensation insurance to the City of Cudahy Building Department, before the issuance of any permits.
29. Contractors hired for the project must guarantee that safe and convenient school pedestrian routes are maintained. This would pertain to the arrival and dismissal times of each school day. Traffic controls (signs) shall be installed as needed to ensure safe routes to school. Construction vehicle trips scheduling shall be sequenced to minimize conflicts with pedestrians, school buses and cars.
30. The applicant shall comply with all conditions set forth by the Los Angeles Unified School District for this application in its letter of correspondence and on file with the City Planning Department.
31. Increased noise levels will be mitigated by the limitation of construction activities to not earlier than 7:00 A.M. and not later than 6:00 P.M. To reduce temporary construction noise contractors hired for the project shall implement BMPs such as providing advance notification of construction to surrounding land uses, ensuring that equipment is properly muffled, placement of noise sources away from residences, implementing noise attenuation measures, and generally conduct construction in compliance with City of Cudahy Municipal Code Article 23: Environmental Performance Standards.
32. An Affidavit shall be recorded with the Los Angeles County Recorder's Office stating that the lot shall be maintained as a single contiguous lot and certified copy shall be filed with the City Clerk of the City of Cudahy.
33. In the event of transfer of ownership of the property involved in this application, the new owner shall be fully informed of the use of said property as set forth by this approval, together with all conditions, which are a part of, said approval.
34. Issuance of Building Permits shall be conditioned upon submission of Covenants, Conditions and Restrictions (CC&Rs) for review and approval by the City Attorney to ensure that: (i) A homeowners association with legal power to maintain the common areas is established, and (ii) the City is made part of the CC&Rs for the purpose of performing common area maintenance if the homeowners association fails to do so and to recoup the City's cost of doing so via an assessment imposed on the unit owners, and (iii) copies of the signed CC&Rs shall be recorded in the Los Angeles County Recorder's Office, and a copy given to the City of Cudahy and to each homeowner of the development. A fee must be paid for city attorney review, which shall be equal to 110 percent of costs reasonably borne for document review.
35. All City Fees, i.e., plan check, building permit fees, school fees, Quimby fees, CC&R review, etc., shall be paid by the applicant prior to the submittal of the plans to the Building and Safety Department".

36. The applicant shall sign and notarize an Affidavit of Acceptance of Conditions, which acknowledges all of the conditions imposed herein and the applicant's acceptance of this Permit subject to those conditions.
37. The rights granted under DRP No. 41-518 and CUP 38-373 may be modified or revoked by the Planning Commission should it be determined that the proposed uses or conditions under which the project is being operated or maintained is detrimental to the public health, welfare or materially harmful to property or improvements in the vicinity, if the property is operated or maintained to constitute a public nuisance or is a contributor to blight, or if the uses on the property are changed from the uses expressly approved herein .
38. The rights granted under DRP No. 41-518 and CUP 38-373 shall expire within one (1) year of the date of approval by the Planning Commission unless proper building permits have been obtained or the applicant(s) applies for and is granted an extension of time. No extension of time will be considered unless the application for an extension is filed at least 30 days prior to the expiration. An extension will not be granted if conditions have changed in that the requisite findings for approval can no longer be made .
39. Prior to any occupancy permit being granted, or commencement of the approved use, these conditions shall be completed to the satisfaction of the City.

**PASSED AND APPROVED THIS 24TH DAY OF FEBRUARY, 2020 BY THE FOLLOWING ROLL
CALL VOTE:**

AYES:
NOES:
ABSENT:
ABSTAIN:

Chairman

ATTEST:

APPROVE AS TO FORM:
OLIVAREZ MADRUGA
ASSISTANT CITY ATTORNEY

Salvador Lopez Jr., Deputy Secretary

By: _____
Robert Mc Murry

Memorandum

TO: Salvador Lopez, Director of Planning

FROM: Christine Kudija, JD, AICP, MLA
Principal Planner

DATE: January 13, 2020

SUBJECT: **5306 Santa Clara Street, Cudahy: Single and Multiple-family Residential Air Quality/GHG Memorandum**

1.0 INTRODUCTION

This Memorandum summarizes the results of the pollutant and greenhouse-gas emissions prepared for the proposed project. As shown below, neither construction emissions nor operational emissions exceed the South Coast Air Quality Management District's thresholds for regional or local emissions. Additionally, because the project increases housing density on an existing infill site, and is within ½ mile of a "major transit stop" on Wilcox Avenue, the project is considered compliant with respect to greenhouse gas emissions (GHGs) in local and regional climate-action programs.

The applicant proposes to construct a two-story, six-bedroom single-family residence and two two-story duplex buildings (comprising four duplex units) on a 47-acre site at 5306 Clara Street, Cudahy. The proposed building area is 8,052 square feet. The single-family residence will include a three-car garage, and each duplex unit will include a two-car garage. A 1,644-square foot duplex would be demolished to accommodate site development.

2.0 REGULATORY SETTING

2.1. Air Quality. The project is located within the South Coast Air Basin. The South Coast Air Quality Management District (SCAQMD) has jurisdiction and regulatory authority within the Air Basin. The SCAQMD is responsible for the region's Air Quality Management Plan (AQMP), which sets forth regulations and various control measures to reduce air pollution and bring the region into attainment (compliance) with federal and state clean air standards. The 2016 AQMP includes control measures for both stationary and mobile sources of air pollutants; the control measures are further codified into Rules or set forth as policies for jurisdictions within the Air Basin. Rules set specific limits for emissions from various stationary sources, including specific types of equipment, industrial processes, paints, solvents, and consumer products. Limits on airborne "fugitive" dust from construction and particulates from diesel engines are also set forth and enforceable.

To measure ongoing AQMP progress, the SCAQMD monitors air quality at 38 locations throughout the Air Basin, and has enforcement authority over a four-county area (Los Angeles, Orange, Riverside and San Bernardino Counties; see the SCAQMD website, <http://www.aqmd.gov/>, for comprehensive information regarding the AQMP and the SCAQMD's overall responsibilities). The South Coast Air Basin remains in non-attainment under both

national and California standards for three criteria pollutants, including ozone, particulate matter and fine particulate matter (PM10 and PM2.5, respectively). Figure AQ-1 below shows the region's overall attainment status.

Figure AQ - 1

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1-Hour Ozone	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 Originally 11/15/2010 (not attained) ^{c)}
	CAAQS	1-Hour (0.09 ppm)	Nonattainment	N/A
8-Hour Ozone^{d)}	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Nonattainment (Extreme)	8/3/2038
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
CO	NAAQS	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
NO₂^{e)}	NAAQS	1-Hour (0.10 ppm)	Unclassifiable/Attainment	N/A (attained)
	NAAQS	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment	---
SO₂^{f)}	NAAQS	1-Hour (75 ppb)	Designations Pending (expect Uncl./Attainment)	N/A (attained)
	NAAQS	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	NAAQS	1987 24-hour (150 µg/m ³)	Attainment (Maintenance) ^{g)}	7/26/2013 (attained)
	CAAQS	24-hour (50 µg/m ³) Annual (20 µg/m ³)	Nonattainment	N/A
PM2.5^{h)}	NAAQS	2006 24-Hour (35 µg/m ³)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 µg/m ³)	Attainment	8/24/2016
	NAAQS	2012 Annual (12.0 µg/m ³)	Nonattainment (Serious)	12/31/2025
	CAAQS	Annual (12.0 µg/m ³)	Nonattainment	N/A

Figure AQ - 1, Continued

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
Lead	NAAQS	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ^{d)}	12/31/2015
Hydrogen Sulfide (H ₂ S)	CAAQS	1-Hour (0.03 ppm/42 µg/m ³)	Attainment	---
Sulfates	CAAQS	24-Hour (25 µg/m ³)	Attainment	---
Vinyl Chloride	CAAQS	24-Hour (0.01 ppm/26 µg/m ³)	Attainment	---

- a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour O₃ standard (0.12 ppm) was revoked, effective June 15, 2005 ; however, the Basin has not attained this standard based on 2008-2010 data and is still subject to anti-backsliding requirements
- d) 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the revoked 1997 O₃ standard is still subject to anti-backsliding requirements
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations are still pending, with Basin expected to be designated Unclassifiable /Attainment.
- g) Annual PM₁₀ standard was revoked, effective December 18, 2006; 24-hour PM₁₀ NAAQS deadline was 12/31/2006; SCAQMD request for attainment redesignation and PM₁₀ maintenance plan was approved by U.S. EPA on June 26, 2013, effective July 26, 2013.
- h) Attainment deadline for the 2006 24-Hour PM_{2.5} NAAQS (designation effective December 14, 2009) is December 31, 2019 (end of the 10th calendar year after effective date of designations for Serious nonattainment areas). Annual PM_{2.5} standard was revised on January 15, 2013, effective March 18, 2013, from 15 to 12 µg/m³. Designations effective April 15, 2015, so Serious area attainment deadline is December 31, 2025.
- i) Partial Nonattainment designation – Los Angeles County portion of Basin only for near-source monitors. Expect redesignation to attainment based on current monitoring data.

Source: South Coast Air Quality Management District, available at <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naqs-caqs-feb2016.pdf?sfvrsn=14> (accessed January 10, 2020).

2.2 Greenhouse Gas Emissions. “Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth by allowing incoming short wavelength visible sunlight to penetrate the atmosphere, while restricting outgoing terrestrial long wavelength heat radiation from exiting the atmosphere. The principal greenhouse gases (GHGs) include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Collectively GHGs are measured as carbon dioxide equivalents (CO₂e).

Fossil-fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of global GHG emissions. Industrial and commercial sources are the second-largest contributors of GHG emissions, constituting about one-fourth of total emissions. According to climate scientists, California and the rest of the developed world must cut emissions by 80 percent from today’s levels to stabilize the amount of CO₂ in the atmosphere and prevent the most severe effects of global climate change.

California has passed several bills and former Governor Jerry Brown signed seven executive orders (EOs) regarding greenhouse gases. GHG Statutes and EOs include Assembly Bill (AB) 32, Senate Bill (SB) 1368, EO S-03-05, EO S-20-06, EO S-01-07, EO S-13-08, EO B-16-12, EO B-18-12, and EO B-30-15. Of these, AB 32, the California Global Warming Solutions Act of 2006, mandates that California’s GHG emissions be reduced to 1990 levels by 2020, and tasks the California Air Resources Board (CARB) with regulating GHG emissions as well as coordinating with other state agencies to implement AB 32’s reduction goals.

EO S-3-05 provides a more long-range goal and requires an 80 percent reduction of GHGs from 1990 levels by 2050. On a per-capita basis, that means reducing annual emissions of 14 MTs of CO₂ equivalent for every person in California down to approximately 10 MTs per person by 2020. Issued in 2015, EO-B-30-15 sets an increasingly-aggressive GHG-emissions target for 2030, 40 percent below 1990 levels. EO-B-30-15 was codified by SB 32 in 2016, which also provided the CARB with additional direction for refining the Climate Change Scoping Plan. That EO set forth five “pillars” for accomplishing GHG reduction, including (1) reducing today’s petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests and wetlands so they can store carbon; and (6) periodically updating the state’s climate adaptation strategy, Safeguarding California.

The CARB’s 2017 Climate Change Scoping Plan, in part implements EO B-30-15, and sets forth a “reference scenario” as a baseline for measuring how much GHG emissions can be reduced in several economic sectors. This scenario illustrates the level of GHG emissions generated statewide through 2030 with existing policies and programs, but without any further action to reduce GHGs. This level is estimated to be approximately 400 million metric tons (MMTs) of CO₂e from all sources in 2030. The CARB’s statewide 2030 target level of emissions is approximately 260 MMTs. **The Scoping Plan estimates that the change from 1990 levels in the residential and commercial sectors must be from 44 MMTCO₂e to 38-40 MMTCO₂e by 2030, a four to eight percent reduction.**

Senate Bill 375 was enacted to link land use and transportation in a manner that would reduce vehicle miles traveled (VMT), thereby reducing GHG emissions. Under SB 375, the California Air

Resources Board (CARB) is responsible for establishing GHG emission-reduction targets, and regional Metropolitan Planning Organizations (MPOs) are responsible for preparing and adopting “Sustainable Communities Strategies” that achieve CARB’s targets.

The Gateway Cities Council of Governments (GCCOG) is the local MPO that includes the City of Cudahy, and has recently prepared a regional CAP framework for member cities as part of a sustainable community strategy. The framework contains a comprehensive toolkit for cities’ use to develop their own CAPs and set emissions targets. To date, the City of Cudahy has not set emissions targets or numeric thresholds. However, the CAP framework itself shows various strategies that can help reduce GHG emissions: promoting “green” building; improving efficiency of existing buildings; increasing the use of local clean energy generation; and others.

As part of the statewide effort to increase local clean energy generation, the California Building Code (Title 24) requires all new single-family and low-rise (≤ 3 stories) multiple family residential construction to add a minimum capacity of photovoltaic power generation, effective January 2020. The California Energy Commission’s *2019 Residential Compliance Manual* sets that capacity according to the following formula:¹

$$kW_{PV} \text{ required} = (CFA \times A)/1000 + (NDwell \times B)$$

Where:

- kW_{PV} = kWdc size of the PV system
- CFA = Conditioned Floor Area
- NDwell = Number of dwelling units
- A = Adjustment factor from the CEC Residential Compliance Manual Table 7-1, (A= 0.613 for CEC Climate Zone 9)
- B = Dwelling adjustment factor from Residential Compliance Manual Table 7-1, (B=1.36 for CEC Climate Zone 9)

Note that compliance with GHG-reduction strategies may not reduce an individual project’s impacts below significant levels *unless* an emissions target or threshold, based on substantial evidence has been adopted by a local agency. In the absence of a target or threshold, quantified GHG emissions may be determined to be significant and unavoidable. Alternatively, if a project demonstrates consistency with either a local CAP or with the CARB Scoping Plan (such as the percent-reduction goals described above), a finding of “less than significant” may be appropriate.

¹ See California Energy Commission, Residential Compliance Manual, p. 7-1 (January 2019), available at <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency-0> (accessed January 10, 2020).

4.0 METHODOLOGY

The California Emissions Estimator Model® (CalEEMod) v. 2016.3.2 (Excel-based computer model) was used to estimate the project’s emissions. This computer modeling tool is designed to provide a uniform platform for government agencies, land-use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user. The model incorporates average emissions for specific land uses such as that proposed by the project (apartments) at a buildout density of 12.82 du/acre. For modeling purposes, construction was assumed to begin in August 2020, and the project assumed to be operational by the end of 2021. The model requires that particular dates are entered in order to estimate construction phases; if not specifically known, the model inserts default periods for each phase of construction. Figure AQ-2 below shows the SCAQMD’s regional emissions thresholds for various air pollutants. Note that the SCAQMD sets forth greenhouse gas thresholds only for stationary sources.

Additionally, for projects that propose to develop less than five acres of land, the SCAQMD sets localized thresholds for several pollutants that contribute to human cancers. These thresholds substitute for requirements to conduct detailed Health Risk Assessments for small development projects.

Construction and operational greenhouse gas emissions were also estimated using model default values for construction equipment (without mitigation strategies such as lower-emission non-road engines). Mitigation strategies required by the California Building Code were incorporated into the model’s “mitigation” data entry fields to estimate CO₂e emissions during project “operation,” e.g. when new residences are constructed and occupied. These strategies including a minimum level of photovoltaic (solar) electricity-generating capacity and low-flow plumbing fixtures. Moreover, all new residential construction must comply with the California Green Building Standards Code (developed to meet AB 32 GHG-emission goals).

Table GHG-1 shows the estimated GHG emissions for the project, as unmitigated and mitigated by building code requirements. Percent reductions with mitigation are shown for operational emissions. The “unmitigated” emissions would result from a “business-as-usual” strategy of, for example, building a vehicle-dependent, stand-alone multifamily development. In contrast, the “mitigated” emissions show reductions that would be achieved by code compliance.

Figure AQ - 2

SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds ^a		
Pollutant	Construction ^b	Operation ^c
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk \geq 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas \geq 1 in 1 million) Chronic & Acute Hazard Index \geq 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO ₂ eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants ^d		
NO ₂ 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
PM2.5 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
SO ₂ 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99 th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal)	

^a Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

^b Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

^c For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

^d Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

^e Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million $\mu\text{g}/\text{m}^3$ = microgram per cubic meter \geq = greater than or equal to
 MT/yr CO₂eq = metric tons per year of CO₂ equivalents $>$ = greater than

Source: South Coast Air Quality Management District, *Air Quality Significance Thresholds*, available at <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf> (accessed January 10, 2020).

Tables AQ-1 and AQ-2 below summarize maximum daily construction and operational emissions for the proposed project, contrasted with SCAQMD thresholds. See Appendix A for full CalEEMod results (annual, winter and summer emissions profiles). Table GHG-1 summarizes greenhouse gas emissions.

Table Abbreviations:

- ROG: Reactive Organic Gases/Volatile Organic Compounds
- NOx: Oxides of Nitrogen
- CO: Carbon Monoxide
- SO2: Sulfur Dioxide
- PM10: Particulate Matter, 10 microns or less
- PM2.5: Fine Particulate Matter, 2.5 microns or less
- Area: Emissions resulting from architectural coatings and 10-year reapplication rates, hearths and woodstoves (none in these projects), consumer products and landscape equipment
- Energy: Emissions resulting from energy generation at power plants attributable to a project
- Mobile: Emissions resulting from projected vehicle trips attributable to a project

**Table AQ - 1
Construction Emissions**

Unmitigated Maximum Daily Construction Emissions						
	ROG (VOC)	NOX	CO	SO2	Total PM10	Total PM2.5
Year	lbs/day					
2020 Winter	0.9282	8.9676	8.0788	0.0141	1.3326	0.8899
2021 Winter	10.3000	8.0895	7.7016	0.0131	0.5561	0.4229
2020 Summer	0.9234	8.9667	8.1113	0.0142	1.3326	0.8899
2021 Summer	10.2996	8.0889	7.7657	0.0133	0.5561	0.4229
Maximum	10.3000	8.9676	8.1113	0.0142	1.3326	0.8899
Threshold	75	100	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO
Localized Threshold (LST)	N/A	46	231	N/A	4	3
Exceeds Threshold?		NO	NO		NO	NO

**Table AQ - 2
Operational Emissions**

Unmitigated Maximum Daily Operational Emissions						
	ROG (VOC)	NOX	CO	SO2	Total PM10	Total PM2.5
Winter	lbs/day					
Category						
Area	0.1858	4.7700e-003	0.4134	2.0000e-005	2.2800e-003	2.2800e-003
Energy	2.8400e-003	0.0243	0.0103	1.6000e-004	1.9600e-003	1.9600e-003
Mobile	0.0588	0.3052	0.7809	2.8200e-003	0.2431	0.0666
Total	0.2474	0.3342	1.2046	3.0000e-003	0.2473	0.0708
Threshold	55	55	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO
Summer	lbs/day					
Category						
Area	0.1858	4.7700e-003	0.4134	2.0000e-005	2.2800e-003	2.2800e-003
Energy	2.8400e-003	0.0243	0.0103	1.6000e-004	1.9600e-003	1.9600e-003
Mobile	0.0612	0.2981	0.8307	2.9800e-003	0.2431	0.0666
Total	0.2498	0.3272	1.2545	3.1600e-003	0.2473	0.0708
Threshold	55	55	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO

**Table GHG-1
Annual GHG Emissions Summary (CO₂e)**

	Phase	Metric Tons (MT) CO₂e/YR		
		Without Mitigation^a	Mitigated^b	Percent Reduction
Totals	Construction - 2020	55.7466	55.7466	0.00
	2021	5.5832	5.5832	0.00
	Operation	64.9261	57.2244	11.86

“Without Mitigation” for CalEEMod purposes means that estimated future project building construction and operational data were entered without adjusting for equipment engine emissions or operational features required in the California Building Code (Title 24). This is essentially the “business as usual” scenario.

“Mitigation” for CalEEMod purposes can mean inherent design features of a project, such as increasing a project’s “walkability,” thus reducing vehicle trips. Since the proposed project increases residential density in an area close to transit, shops, restaurants and services, increasing walkability is already a component of the project, not a necessary mitigation measure. Also included as “mitigation” were other features of future construction that are required by the California Building code, such as minimum levels of solar-energy generation on each residential building, water-conserving plumbing and irrigation systems, and adherence to green building standards.

5.0 Conclusions

As shown by Tables AQ-1 and AQ-2, and further detailed in the CalEEMod results in Appendix A, neither the construction nor the operational phases of the proposed project exceed SCAQMD thresholds. Additionally, Table GHG-1 shows that the project's operational emissions are estimated to result in GHG-emissions reduction from business-as-usual by 12%, exceeding CARB's four to eight-percent goals noted above. Accordingly, the project's air quality and greenhouse gas impacts may be considered less-than-significant.

Memorandum

TO: Sal Lopez, Director of Planning

FROM: Joanne Itagaki, Project Manager 

DATE: January 6, 2020

SUBJECT: City of Cudahy, 5306 Clara Street, Trip Generation Analysis

It is my understanding that a 4-unit multifamily residential development (duplex complex) is proposed to be built at 5306 Clara Street where 1 single-family detached home will remain. Concerns have been expressed that there is a need for a Traffic Impact Analysis (TIA) to fully determine the traffic impacts of the proposed development.

Cudahy, like many cities in Los Angeles County, looks to guidelines provided by Metro's Congestion Management Program (CMP), Appendix D in determining when a TIA should be conducted. The CMP indicates that a proposed project adding 50 or more peak hour trips (both directions) in either the AM or PM peak period should conduct a TIA.

The County of Los Angeles, Public Works also provides guidelines regarding TIA. The County threshold is a proposed project that adds 500 or more trips per day.

Table 1 provides the trip generation analysis of the proposed 9-unit apartment complex. This table also accounts for the 1 existing single-family home to remain. As identified in **Table 1**, the net trips from the project site include: 39 daily trips (19 in/19 out); 3 AM peak trips (1 in/2 out); and, 3 PM peak trips (2 in/1 out)*. The net trips fall below the thresholds of Metro and the County. Therefore, a traffic impact analysis would not be required of the proposed project based on these thresholds.

Should you have any questions, please contact me.

* - Trip totals are rounded to whole numbers. Therefore, totals may not appear to be mathematically correct.

Attachments

- Table 1 – Trip Generation Analysis

City of Cudahy
Table 1
5306 Clara Street
Trip Generation Analysis

10th Edition ITE Land Use Codes

Code 220 - Multifamily Housing (Low Rise)

This Code used for the 4 duplex units as this was the only multifamily use Code used in the City's 2017 General Plan Traffic Impact Analysis.

Code 210 - Single-Family Detached Housing

This Code used for the existing single-family home to remain.

		Daily				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 4 duplex units	4	7.32	50/50	15	15	29
Existing 1 unit single-family home to remain	1	9.44	50/50	5	5	9
Net Daily Trips				19	19	39

		AM Peak of Street				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 4 duplex units	4	0.46	23/77	0	1	2
Existing 1 unit single-family home to remain	1	0.74	25/75	0	1	1
Net AM Peak Trips				1	2	3

		PM Peak of Street				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 4 duplex units	4	0.56	63/37	1	1	2
Existing 1 unit single-family home to remain	1	0.99	63/37	1	0	1
Net AM Peak Trips				2	1	3

Note: Trip totals are rounded to whole numbers. Therefore, totals may not appear to be mathematically correct.



AGENDA REPORT

MEETING DATE: February 24, 2020

TO: Honorable Chair & Planning Commission Members

FROM: Salvador Lopez, Interim Community Development Director

Subject: Development Review Permit No. 41-522 and Conditional Use Permit No. 38-369, to allow the construction of a 58-unit multifamily residential development located at 4936-8 Live Oak Street (APN 6226-014-015).

RECOMMENDATION:

Staff recommends that the Planning Commission of the City of Cudahy (the "City"):

1. Approve Development Review Permit No. 41-522 (DRP 41-522) to allow the design, site layout, and construction of a 58-unit multifamily residential development;
2. Approve Conditional Use Permit 38-369 (CUP 38-369) to permit a 75% density bonus permitting 25 of the 58 proposed dwelling units for the development at 4936-8 Live Oak Street in the High Density Residential (HDR) Zone, including associated concessions.

BACKGROUND/PROJECT DESCRIPTION:

The subject property is located on an approximately 35,425 square foot lot located at 4936-8 Live Oak Street in the City of Cudahy in the High Density Residential (HDR) Zone. The site is currently developed with one single-family residence consisting of three bedrooms and two bathrooms totaling 840 square feet, according to the Los Angeles County Assessor's Office. The existing structure is proposed for demolition to accommodate the proposed new multi-family residential construction. The immediate area is developed with a mix of multi-family and single-family residential land uses.

The applicant, Danny BenRoohi, proposes to construct a new 58-unit apartment complex. According to the plans submitted to the city's Planning Division the development will consist of four three-story structures. Thirty-three (33) of the units proposed are "base units" allowed based on the project's zoning and the size of the subject property. The remaining 25 are "density" units based on a 75% density bonus. Fifty-four of these units are proposed to be studio/efficiency units with the remaining being four one-bedroom units. There are 58 parking spaces proposed for the site to be accommodated in first-floor parking garage. The site will be accessed from a common 385-foot long, 26-foot wide driveway along the eastern edge of the property. This driveway will connect to Live Oak Street providing residents and emergency access from either street. This has been reviewed and approved by the Los Angeles County Fire Department.

The project architecture is modern contemporary. Treatments incorporate a blend of contemporary and traditional architectural forms and details which include a flat façade, hip style roof, plaster walls, and

articulated facades such as inset windows and doors, offset/projected wall features and recessed entryways. Proposed building colors incorporate an earth-tone palette with a dark grey smooth stucco finish, brown trims, and decorative veneers.

The buildings would be set back from the eastern side of the property by five to nine feet, the rear setback by ten feet, the western setback by five feet, and the front setback by 15 feet. A six-foot tall concrete-masonry-unit (CMU) wall would be constructed along the entire perimeter of the property. A preliminary landscape plan has been submitted showing landscape areas on the buildings’ perimeter and in interior open space areas and within the front yard setback. A more detailed plan will be submitted with the formal plan check submittal. Project lighting would consist of security lighting and wall lights on the building perimeters, using LED fixtures. All lighting would be designed to avoid light spillage to neighboring properties.

The table below provides floor area detailed information for the proposed units:

Number of units	Number of Bedrooms	Habitable Area
58	54 studio/efficiency units, 4 one-bedroom units	53,872 sq. ft.

The development also includes private open spaces for each unit, although not at the required 200 SF per unit. This is one of the density bonus concessions requested by the applicant (see below for detailed discussion of requested concessions). A series of common open spaces are provided throughout totaling 3,873 square feet. This also falls short of requirements, but is another concession requested by the applicant associated with the density bonus.

A minimum number of on-site parking spaces are required for each residential unit based on the number of bedrooms, inclusive of guest parking spaces. The table below identifies the number of spaces required by the zoning code based on the bedroom count.

Type of unit	# of spaces required	# of spaces provided
Studio/1 bedroom	1 space	1 space

A total of 58 accessible parking spaces are provided throughout the site.

ANALYSIS & DISCUSSION:

General Plan and Zoning. The General Plan designates the site and surrounding area as “High Density Residential” as noted above, the property’s zoning is High Density Residential (HDR). Table 1 below shows the project site and surrounding area’s zoning and land uses.

The HDR Zone incorporates higher-density, multi-story, multi-family residential areas at a minimum density of 1,100 square feet per 3-bedroom unit, or approximately a maximum of 40 dwelling units per acre and requires 280 square feet of common open space per unit, and 200 square feet of private open space per unit. The HDR Zone restricts building height to four stories or 55 feet, whichever is less (CMC § 20.16.030).

**Table 1
Zoning and Land Use**

	ZONING	LAND USE
PROJECT SITE	HDR	Single and Multifamily Residential
NORTH	HDR	Single and Multifamily Residential
EAST	HDR	Single and Multifamily Residential
SOUTH	HDR	Single and Multifamily Residential
WEST	HDR	Single and Multifamily Residential

The proposed project meets General Plan and Zoning standards for use (multiple-family residential), building height, and front and side setbacks. The project plans show that, although the common and private open space areas do not either meet or exceed zoning standards, the applicant has included these shortcomings on their list of concessions under the density bonus CUP. In addition, the length of two of the four proposed buildings of 172.5 exceeds the maximum allowable length of 125 feet. This is also a requested concession. In addition, the applicant does not propose guest parking spaces for the development as these are not required for projects that include a density bonus. The project proposes a 385-foot long, 26-foot wide driveway as required by the Los Angeles County Fire Department. Table 2 below compares the project's characteristics with development standards.

**Table 2
Development Standards: Required vs. Proposed Project**

	General Plan	Zoning	Density	Height	Setbacks	Min Floor Area (studio/1 BR)	Parking	Private Open Space per unit	Common Open Space
Required	HDR	HDR	1,089 SF 40 du/acre maximum; 20 du/acre minimum	4 stories	Front: 15 ft Side: 5 ft. (for 2 stories) Rear: 10 ft.	500 SF studio 700 SF 1 BR	1 spaces/unit 0.5 guest space/unit	200 SF/Unit = 11,600 SF	280 SF/Unit = 16,240 SF
Proposed	HDR	HDR	58 dwelling units	3 stories	Front: 15 ft. Side: 5-9 ft. Rear: 10 ft.	503-800 SF	1 space/unit, no guest spaces	3,717 SF	3,873 SF
Consistent?	YES	YES	NO	YES	YES	YES	NO	NO	NO

Table 2 shows that the proposed development complies strictly with all applicable development standards for development of new multifamily developments in the HDR zone with the exception of requested concessions associated with the project's density bonus of 75% and discussed below.

DENSITY BONUS

In order to accomplish the proposed 58-unit project, the applicant is requesting a density bonus of 75% more than the maximum density allowable in the HDR zone. The Cudahy Municipal Code sets the maximum (or "base") density for the site at 33 units (1,742 square feet per unit) without additional discretionary approvals.

California density bonus law (Government Code § 65915(p)) and CMC § 20.52.364 require the City to grant a density bonus up to 35% greater than the base density in return for the applicant's guarantee that the added units would be restricted to very low, low, or moderate-income levels. The City may

grant greater densities provided that certain findings are made along with a conditional use permit but is not obligated to do so.

For this site in the HDR zone, the 75% density bonus is 25 units more than the 33 units that would be allowed by-right, i.e. a 58-unit project. For the City to grant a conditional use permit for a density bonus greater than the maximum 35%, State Law requires that the project set aside *no less than* the percentage and types of units required to earn a density bonus of 35 percent under the state density bonus law. In this case the applicant is proposing to provide 11% Low Income Units, equivalent to seven units (rounded up from 6.38).

Again, the applicant proposes to designate seven units for low-income tenants. This allocation meets the minimum number of required affordable units under both State law and the CMC.

Requested Concessions. As part of the Density Bonus process, an applicant may also request specific concessions, i.e. relaxation of zoning code requirements and/or site development standards, including but not limited to setback and square footage reductions, vehicle parking spaces, communal open space area, or landscaping requirements. The applicant requests the following concessions:

1. Private Open Space

The Applicant is requesting a concession to approve a reduction in the private open space requirement, providing a total of no less than 64 square feet of private open space per residential unit. Staff supports this concession as the patio and terrace areas provide ample space for private enjoyment and the development provides additional common areas throughout.

2. Common Open Space

The Applicant is requesting a concession to approve a reduction in the common open space requirement, providing a total of no less than 67 square feet of common open space per residential unit. Staff supports this concession as the common open space provided throughout still provides ample open space for residents living primarily in studio/efficiency units.

3. Maximum Building Length (off-list concession)

The Applicant is requesting a concession to approve a building length of 172.5 feet for two of the four buildings proposed, which is 47.5 feet more than the maximum requirement of 125 feet. CMC § 20.52.362 allows an applicant to propose concessions that result in identifiable, financially sufficient, and actual cost reductions. The Fire Department has reviewed the site plan and has not objected to the building lengths as the length of the buildings would not interfere with emergency access and on-site maneuverability. Since strict compliance to the building length standard would likely result in smaller or fewer dwelling units, and because the proposed units exceed the minimum habitable areas for efficiency/studio and one-bedroom units, while reserving units for low-income tenants and providing foreseeably better living conditions, staff supports this concession.

4. Guest Parking

The applicant is requesting a concession to approve the site plan without the provision of guest parking spaces, as allowed by density bonus law. Staff supports this concession as the units are entirely efficiency/studio or one-bedroom units, each of which is provided with one garaged parking space.

Density Bonus Procedural Requirements. CMC § 20.52.361 states that the density bonus and concessions requested shall be considered in conjunction with any housing development application for the Project. CMC § 20.52.360 requires that a density bonus must be approved by a decision-making body, either the Planning Commission or the City Council, depending on the entitlements requested. The requirement for a minimum number of affordable units is discussed above. The applicant has designated seven (7) units as affordable for the project development, and a specific condition addressing deed-restriction and income level has been included as a condition of approval.

CMC § 20.52.367 also requires that in approving the density bonus and any related concessions, the City and Applicant shall enter into a Density Bonus Housing Agreement. This has been required as a condition of approval.

Should the City Council elect to deny one or more of the requested concessions, one of the following three findings must be made (Government Code § 65915 (d)(1)), based upon substantial evidence:

1. The concession or incentive is not required in order to provide for affordable housing costs, as defined in § 50052.5 of the Health and Safety Code, or for rents for the targeted units to be set as specified in subdivision (c); and
2. The concession or incentive would have a specific adverse impact, as defined in paragraph (2) of subdivision (d) of § 65589.5 of the California Government Code, upon public health and safety or the physical environment or on any real property that is listed in the California Register of Historical Resources and for which there is no feasible method to satisfactorily mitigate or avoid the specific adverse impact without rendering the development unaffordable to low- and moderate-income households; and
3. The concession or incentive would be contrary to State or Federal law.

Staff certifies that none of these findings apply to the proposed request, as shown below by the project's compatibility with many General Plan policies and goals; therefore, staff recommends that the requested concessions be approved, based on the requirements of the Zoning Code.

City of Cudahy General Plan Land Use and Housing Element Provisions. The following provisions relate to the project's consistency with the City's policies for affordable housing:

- **Land Use Element Policy 2.8.** The City of Cudahy will provide adequate housing for various family sizes and income levels by allowing for different densities of development.

Analysis: The project's proposed increased density beyond existing conditions would provide additional multi-family housing for the City. This is consistent with Policy 2.8, which allows for "different densities of development" as the project would replace single-family residential with relatively affordable and denser multi-family development.

- **Housing Element Goal 2.** The City of Cudahy will promote affordable housing and shelter for all economic segments of the community.
 - **Housing Element Policy 2.1.** The City of Cudahy will promote all State, regional and local practices and plans that support housing availability for all economic segments of the population.

Analysis: The project would provide additional housing in the City, increasing supply and providing a more affordable option to residents than the current use of single-family.

- **Housing Element Policy 2.5.** The City of Cudahy will encourage variety in the supply of housing at costs affordable to the various income levels of the population.

Analysis: The project would supply new studio/efficiency and one-bedroom units that exceed the minimum habitable floor area.

Compatibility with surrounding uses. The proposed multiple-family residential project is generally compatible and consistent with surrounding uses. Single and multiple-family residential uses lie on all sides of the project site, in both one and two-story structures. The building height does not exceed the HDR zone's 55-foot or four-story maximum height. The placement of the structure on the site, facing a central driveway and a front yard setback of 15 feet, reduces the project's visual bulk. The subject site is elongated and oriented north-south perpendicular to its access roads. This will also serve to limit any aesthetic concerns about the proposed development. The proposed rear setback of 10 feet does not intrude on residential uses.

The Los Angeles County Fire Department's Land Development Division reviewed the proposed plan for access requirements and has tentatively approved the proposed access (26-foot wide driveway) to the subject property and the proposed units, with conditions of approval.

REQUIRED FINDINGS:

DEVELOPMENT REVIEW PERMIT

CMC § 20.84.210, Basis for Approval or Denial of a Development Review Permit.

- **20.84.210(a) The project is consistent with the City of Cudahy General Plan, any applicable specific plan, and any plan of another governmental agency made applicable by statute or ordinance.**

Support for Finding: The project is compatible with the City of Cudahy's General Plan because it proposes a multiple-family residential project in the High-Density Residential General Plan designation and the High-Density Residential zone, at a density allowable under the Cudahy zoning code.

- **20.84.210(b) The height, bulk, and other design features of structures are in proportion to the building site, and external features are balanced and unified to present a harmonious appearance.**

Support for Finding: The proposed development's structure is a full story lower than the maximum allowed in the HDR zone. There is sufficient area in the 15-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences that also face the street. Accordingly, the project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.

- **20.84.210(c) The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses.**

Support for Finding: The existing surrounding properties include single story and two-story single-family and multi-family residences. The proposed development includes 58 multifamily residential units, consistent with the height, bulk, and other design features found in the surrounding area. The proposed surface articulations, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.

- **20.84.210(d) The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development.**

Support for Finding: The proposed site layout presents a balanced, axial plan that relates to similar structures along Live Oak Street. The development's orientation beyond the setback and the common driveway helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for landscaping, including the front setback, the rear setback, the private open space and common areas. The common driveway permits good visibility along the length of the project interior and will have security lighting for safety.

- **20.84.210(e) The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features.**

Support for Finding: The proposed development requires minor grading and demolition of an existing structure. Some of the lot is currently dirt and does not contain any trees. However, the rest of the site is urbanized, flat and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs, which would replace those that would be removed.

- **20.84.210(f) The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site.**

Support for Finding: The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.

- **20.84.210(g) Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner which is in harmony with the design of the structures and grounds.**

Support for Finding: There are no proposed exterior mechanical equipment, machinery, or service areas except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning code requirements for multi-family developments. Other mechanical equipment must comply with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.

- **20.84.210(h)** The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character of such property.

Support for Finding: The proposed project would re-develop a site that lies between occupied single and multiple-family residences. By introducing new, up-to-date residences with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

CONDITIONAL USE PERMIT – 75% RESIDENTIAL DENSITY BONUS

Basis for Approval or Denial of a Conditional Use Permit for a 75% Density Bonus:

- **20.52.340(A)**. The project is consistent with the affordable housing provisions of the General Plan.

Support for Finding: The project's proposed increased density, governed by the terms of the Conditional Use Permit, would provide at least seven affordable units. This is consistent with the General Plan Land Use Element Policy 2.8, which allows for "different densities of development" when a project would supply housing for various income levels. The project is requesting a density bonus as permitted by State and local law and must set aside at least seven units as affordable. This is consistent with the General Plan Housing Element Policy 2.1 regarding supporting housing availability for all economic segments. The project would supply new residential units that exceed the minimum habitable floor area. At least seven units would be characterized as "affordable" to residents with low incomes, consistent with General Plan Housing Element Policy 2.5. Finally, the project would construct new housing on a parcel in an existing multiple-family neighborhood. It will rehabilitate the property, consistent with General Plan Housing Element Policy 3.5.

- **20.52.340(B)**. The project sets aside no less than the percentage and type of units required to earn a density bonus of 35 percent or more under the state density bonus law.

Support for Finding: The applicant is required to set aside seven units as affordable, pursuant to California Government Code § 65915 and to Cudahy Municipal Code § 20.52.300 et seq. The present proposal includes seven units for low income levels, consistent with the minimum number of required units for a 35% or more density bonus.

- **20.52.340(C)**. The applicant has adequately demonstrated that the project will not generate unmitigated significant noise, traffic, parking, or other impacts detrimental to surrounding properties or the general welfare.

Support for Finding: The environmental-impact issues cited above are addressed in the EIR that was adopted as part of the General Plan 2040, which show that the project does not present significant environmental impacts that cannot be mitigated by either existing regulations or specific mitigation measures that have been incorporated into the project's Conditions of Approval.

Additional Findings for Approval:

- **There are adequate provisions for public and emergency vehicle access, fire protection, sanitation, water, and public utilities and services to ensure that the proposed development would not be detrimental to public health and safety.**

Support for Finding: Planning staff and the Los Angeles County Fire Department reviewed the site plan. With application of the conditions of approval, the proposed site plan complies with the City's Zoning Code and Fire Department requirements related to vehicle access, fire protection, sanitation, water, and public utilities and services.

CEQA (CALIFORNIA ENVIRONMENTAL QUALITY ACT):

Based upon the information received and Staff's assessment, the proposed Project is categorically exempt from California Environmental Quality Act ("CEQA") pursuant to Section 15332 (Class 3, In-Fill Development Projects). Approval of the project satisfies the requirements under this exemption. The project is consistent with the General Plan in that it facilitates and encourages diversity in housing types. The applicant proposes seven apartment units, which adds additional housing options in the City. The project is further consistent with the Housing Element of the General Plan in that it contributes units towards the required Regional Housing Needs Assessment (RHNA) requirement. Finally, the proposed project is consistent with the General Plan of the City as it meets a) high-density residential development; b) is located in the City on a site of less than five acres; c) the site has no value as a habitat for endangered species, as it is in an urbanized area and was previously developed with a single family home; d) there are no anticipated impacts to traffic, noise, or air quality as the land use at the site is not substantially changing, and e) is adequately served by utilities and public services. The Categorical Exemption findings are supported by the following studies (attached): air quality/greenhouse gas emissions (Attachment 5) and traffic (Attachment 6). The air quality/greenhouse gas emissions study concludes that no impacts to the environment would occur as a result of the proposed project because neither the construction nor operations phases of the project would exceed SCAQMD thresholds. This is detailed in the attached report and is based on CalEEMod results. In addition, GHG emissions are expected to decrease at the project site by 47%, which exceeds CARB's four to eight-percent goals. The findings regarding potential traffic impacts are supported by the attached traffic study which concludes that no impacts would occur upon project implementation due to the projected daily trip generation of 415 daily trips (26 AM peak trips, 31 PM peak trips) falling below adopted County and Metro thresholds. In addition, no significant impacts regarding Aesthetics thresholds as identified by CEQA would occur. The project site is in an urbanized area, is not located within or near a scenic highway, contains no significant rocks or outcroppings, and would not impede any scenic views into or out of the project site as the proposed development is only three stories in height and no scenic views exist from or into the project site. The site is a residential property surrounded by other residential properties, as well as commercial properties, of similar size in an urbanized area.

ATTACHMENTS:

1. Location Map
2. Proposed Development Plans
3. Resolution No. PC 20-02
4. Air Quality/Greenhouse Gas Emissions Study
5. Traffic Study

LOCATION MAP



4936-38 Live Oak Street

RESOLUTION NO. PC 20-03

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CUDAHY APPROVING DEVELOPMENT REVIEW PERMIT NO. 41-522 AND CONDITIONAL USE PERMIT NO. 38-369 TO ALLOW THE CONSTRUCTION OF A 58-UNIT MULTIFAMILY RESIDENTIAL DEVELOPMENT LOCATED AT 4936-8 LIVE OAK STREET. APPLICANT: DANNY BENROOHI.

WHEREAS: The applicant, Danny BenRoohi, requests approval of a Development Review Permit to allow the design, site layout, and the construction of a 58-unit multifamily residential development and Conditional Use Permit to allow a 75% Density Bonus more than the allowable density allowed in the High Density Residential Zone.

WHEREAS: The subject property is located at 4936-8 Clara Street in an area that is designated by the Cudahy General Plan and by the Cudahy Zoning Map as High Density Residential; and

WHEREAS: The subject property is approximately 35,425 square feet in area, and the HDR zone sets forth the maximum residential density of 1,089 square feet per acre. The base density of the parcel is 35 units, calculated by dividing the parcel area by the zone-assigned density and rounding down to the next whole number ($35,425/1,089 = 35.53$); and

WHEREAS: This matter was duly posted and set for a special public hearing for February 24, 2020 at 6:30pm consistent with the City of Cudahy's Zoning Ordinance procedures for Development Review Permits and Conditional Use Permits.

NOW THEREFORE, the Planning Commission of the City of Cudahy hereby resolves:

SECTION 1. The Project has been environmentally reviewed pursuant to the provisions of the California Environmental Quality Act (Public Resources Code Sections 21000, et seq ("CEQA"), the State CEQA Guidelines (California Code of Regulations, Title 14, Sections 15000, et seq), and the City's Local CEQA Guidelines. In accordance with the provisions of the California Environmental Quality Act (CEQA), an environmental analysis has been completed for this case. As a result of that analysis, it has been determined that this case will not have a significant impact upon the environment and is Exempt, pursuant to Article 12.5, Section 15195, Residential Infill Exemption, of the CEQA Guidelines and therefore, no further environmental documentation will be required.

SECTION 2. After considering the proposal on the basis for approval or denial of Development Review Permit 41.522 stated in Chapter 20 of the Cudahy Municipal Code, the Planning Commission finds as follows:

- A. The project is compatible with the City of Cudahy's General Plan because it proposes a multiple-family residential project in the High-Density Residential General Plan designation and the High-Density Residential zone. The HDR designation and zone set forth a residential density of up to 40 dwelling units/acre. The High-Density Residential Zone designation sets forth a residential density of up to 40 units/acre; the HDR zone sets project density to 20-40 units per acre. The applicant has requested a density bonus of 75% such that these densities would be exceeded contingent on the approval of CUP 38-

369 as part of a request for concessions.

- B. The height, bulk, and other design features of the Project's structures are in proportion to the building site, and external features are balanced and unified so as to present a harmonious appearance. The proposed development's structure is three stories in height, similar to other multi-story structures within the immediate neighborhood. There is sufficient area in the 15-foot front setback for ample and dense landscaping, presenting a harmonious appearance with nearby residences that also face the street. Accordingly, the project is consistent with the height, bulk, and other design features required by the City Zoning design guidelines and provides a unified and uniform appearance.
- C. The project design contributes to the physical character of the community, relates harmoniously to existing and anticipated development in the vicinity, and is not monotonously repetitive in and of itself or in conjunction with neighboring uses and does not contribute to excessive variety among neighboring uses. The existing surrounding properties include single story and two-story single-family and multi-family residences. The proposed development includes 58 multifamily residential units, consistent with the height, bulk, and other design features found in the surrounding area. The proposed surface articulations, including trimmed windows, pop-out terraces etc., avoid monotonous repetition.
- D. The site layout and the orientation and location of structures and their relationship to one another and to open spaces, parking areas, pedestrian walks, signs, illumination, and landscaping achieve safe, efficient, and harmonious development. The proposed site layout presents a balanced, axial plan that relates to similar structures along Live Oak Street. The development's orientation beyond the deep setback and the common driveway helps to screen the building's mass from the public right of way and adjacent properties. There are areas available for guest parking, landscaping, including the front setback, the rear setback, the private open space and common areas. The common driveway permits good visibility along the length of the project interior and will have security lighting for safety.
- E. The grading and site development show due regard for the qualities of the natural terrain and landscape and do not call for the indiscriminate destruction of trees, shrubs, and other natural features. The proposed development requires minor grading, removal of some existing shrubs, and the demolition of an existing structure. Half of the lot is currently dirt and does not contain any trees. However, the rest of the site is urbanized, flat and there is little evidence of "natural" terrain. There are no "natural" features on the site. Moreover, the project would add new landscaping, including trees and shrubs, which would replace those that would be removed.
- F. The design, lighting, and placement of signs are appropriately related to the structure and grounds and are in harmony with the general development of the site. The project will not have illuminated signage, with the exception for possible illuminated identifying address signs on the front elevation. That sign must meet CMC standards for property identification signs and the conditions of approval for the project, and thus would be in harmony with the general development of the site.
- G. Mechanical equipment, machinery, trash, and other exterior service areas are screened or treated in a manner that is in harmony with the design of the structures and grounds. There are no proposed exterior mechanical equipment, machinery, or service areas

except for the trash enclosures which are located behind decorative view obscuring doors to prevent stormwater runoff and to provide further screening and meets zoning code requirements for multi-family developments. Other mechanical equipment must comply with CMC design guidelines and Building Code standards, which require that all mechanical equipment, machinery, trash, and other exterior service areas be screened from public view.

- H. The project shows proper consideration for adjacent residentially zoned or occupied property and does not adversely affect the character or value of such property. The proposed project would re-develop a site that lies between occupied single and multiple-family residences. By introducing new, up-to-date residences with new landscaping, the project would improve the character of the adjacent properties and maintain or improve property value. The design is consistent with the City's General Plan and zoning designation, meets all development standards within the provisions of the Development Review Permit for the project, is compatible with the surrounding residential use, and will not adversely affect the value or quality of the neighborhood.

SECTION 3. After considering the proposal on the basis for approval or denial of the Conditional Use Permit 38.369 stated in Section 20 of the Cudahy Municipal Code, the Planning Commission finds as follows:

- A. The project's proposed increased density, governed by the terms of the Conditional Use Permit, would provide at least seven affordable units. This is consistent with the General Plan Land Use Element Policy 2.8, which allows for "different densities of development" when a project would supply housing for various income levels. The project is requesting a density bonus as permitted by State and local law and must set aside at least seven units as affordable. This is consistent with the General Plan Housing Element Policy 2.1 regarding supporting housing availability for all economic segments. The project would supply new residential units that exceed the minimum habitable floor area. At least seven units would be characterized as "affordable" to residents with low incomes, consistent with General Plan Housing Element Policy 2.5. Finally, the project would construct new housing on a parcel in an existing multiple-family neighborhood. It will rehabilitate the property, consistent with General Plan Housing Element Policy 3.5.
- B. The project sets aside no less than the percentage and type of units required to earn a density bonus of 35 percent or more under the state density bonus law. The applicant is required to set aside seven units as affordable, pursuant to California Government Code § 65915 and to Cudahy Municipal Code § 20.52.300 et seq. The present proposal includes seven units for low income levels, consistent with the minimum number of required units for a 35% density bonus or more.
- C. The applicant has adequately demonstrated that the project will not generate unmitigated significant noise, traffic, parking, or other impacts detrimental to surrounding properties or the general welfare. The environmental-impact issues cited above are addressed in the EIR that was adopted as part of the General Plan 2040, which show that the project does not present significant environmental impacts that cannot be mitigated by either existing regulations or specific mitigation measures that have been incorporated into the project's Conditions of Approval. Additionally, the project will be subject to measures required by the Los Angeles Unified School District designed to help reduce or eliminate such impacts and are included in the project's conditions of approval.

SECTION 4. Based upon the findings contained in this Resolution and on all other written and oral evidence in the record, the Planning Commission hereby approves Development Review Permit No. 41-523 and Conditional Use Permit 38-369, subject to the conditions of approval set forth below:

1. The applicant, its successors in interest, and assignees, shall indemnify, protect, defend (with legal counsel reasonably acceptable to the City), and hold harmless, the City, and any agency or instrumentality thereof, and its elected and appointed officials, officers, employees, and agents from and against all liabilities, claims, actions, causes of action, proceedings, suits, damages, judgments, liens, levies, and disbursements (collectively, "Claims") arising out of or in any way relating to this project, any discretionary approval granted by the City related to the development of the project, or the environmental review conducted under the California Environmental Quality Act, Public Resources Code section 21000 *et seq.*, ("CEQA") for the project. If the City Attorney is required to enforce any conditions of approval, the applicant shall pay for all costs of enforcement, including attorney's fees.
2. The Applicant shall execute and record with the County Recorder a density bonus housing agreement with the City to ensure the continued affordability of all set-aside affordable units, to the satisfaction of the City Manager and City Attorney. For all set-aside units, the agreement shall specify the household income classification, number, location, size, and construction scheduling and shall require set-aside units in a project and phases of a project to be constructed concurrently with the construction of non-set aside units. The agreement shall run with the land, bind the owner, successors and assigns, and shall include such other provisions as necessary to establish compliance with the requirements of Chapter 20.52.360 of the City's Zoning Code.
3. Subcontractors hired to improve the physical structures of the building shall obtain a contractor's business license from the City Business License Department and submit proof of workers' compensation insurance to the City Building Department, before the issuance of any permits.
4. All conditions shall be binding upon the applicants, their successors and assigns, shall run with the land, shall limit and control the issuance and validity of certificate of occupancy, and shall restrict and limit the construction, location, and use and maintenance of all land and structures within the development.
5. The site shall be kept in a neat manner at all times and any landscaping shall be continuously maintained in a healthy and thriving condition.
6. Any changes in building textures, materials, and colors on the exterior walls are subject to planning approval. A developer is required to submit samples of all exterior materials for approval prior to the issuance of building permits.
7. Construction shall conform to the site plan on file with the Community Development Department and as approved by the Planning Commission.
8. The Developer shall pay into a fund for parkland fees, to be determined at the time of submitting plans into Building and Safety Plan Check, pursuant to the Quimby Act. (Government Code Section §66477).

9. The Developer shall verify in writing that there is sufficient water service for the additional dwelling units proposed. Also, the developer agrees to install any equipment, lines or other necessary improvement to ensure that there will be sufficient water service for the proposed additions.
10. A complete set of plans including the sewer, drainage, grading, and erosion control plans, which accurately depict the location of the proposed structures, driveways, and all other elements of the development, shall be submitted as part of the plan check submittal.
11. The applicant shall comply with all conditions set forth by the Los Angeles County Fire Department for this application in its letter of correspondence and on file with the City Planning Department.
12. Anti-graffiti substances shall be used on both sides of the perimeter walls of the subject property.
13. Applicant shall remove graffiti within 24 hours of application. In the event graffiti is not removed within 24 hours, the applicant grants access and indemnifies the City to enter the property to abate graffiti according to CMC Sections 15.20.150 and 15.20.
14. No motor vehicles (commercial or otherwise) shall be parked on the property except in marked parking spaces.
15. Utility equipment including and not limited to electricity, cable, or telephone equipment must be placed underground. Each unit shall have separate sewer and water lines.
16. Pursuant to the National Pollutant Discharge Elimination System (NPDES) Permit requirements, and City of Cudahy Municipal Code Section 11-2: Storm Water and Urban Runoff Pollution Control all construction projects of less than 1 acre are required to meet a minimum of water quality protection (i.e., Owner's Certification of Compliance with Minimum Requirements Form and/or Wet Weather Control Plan).
17. As part of the plan check submittal, written verification from the local water authority that there is sufficient water service for the additional dwelling units, as well as fire suppression being provided without interruption to residences.
18. A Lighting Plan shall be submitted with construction drawings to Building & Safety for plan check.
19. Landscaping and irrigation plans, which provide for adequate landscaping shall be submitted to the Community Development Department for approval as part of plan check submittal. All types of plants selected, and required watering systems for such landscaping, shall, to the extent possible, conserve water and shall be consistent with any water conservation ordinance enacted by the City.
20. All roof-mounted equipment shall be adequately and decoratively screened and shall not be visible from the street.
21. The locations of air-conditioning condensers shall be shown on the site plan and shall not be visible from the street.

22. A raised curb shall be provided along the borders of the area proposed for parking spaces and open space areas.
23. All vents shall be painted to match the color of the house stucco or wood trim.
24. All building materials and plants selected shall be comparable to the proposed development.
25. The developer shall obtain necessary permits to repair or improve any curb, gutter or sidewalk damaged due to the construction process.
26. The electrical transformer shall be adequately and decoratively screened from view. Dense landscaping shall be used as screening materials. The applicant shall provide the details with the set of building plans to illustrate this requirement.
27. The applicant shall include all general notes on the plans submitted for plan check as required. The floor plans and elevation drawings shall reflect the same information. The developer is required to check said plans for accuracy and make sure plans are drawn to scale and corrections are made as necessary prior to the issuance of permits.
28. The developer shall not deviate from any of the approved plans without prior approval from the Director of Community Development or the Planning Commission.
29. The developer shall submit a complete listing of all subcontractors used for the project. Each subcontractor shall obtain a contractor's business license from the City's Business License Department and submit proof of workers' compensation insurance to the City of Cudahy Building Department, before the issuance of any permits.
30. The applicant shall comply with all conditions set forth by the Los Angeles Unified School District for this application.
31. Increased noise levels will be mitigated by the limitation of construction activities to not earlier than 7:00 A.M. and not later than 6:00 P.M. To reduce temporary construction noise contractors hired for the project shall implement BMPs such as providing advance notification of construction to surrounding land uses, ensuring that equipment is properly muffled, placement of noise sources away from residences, implementing noise attenuation measures, and generally conduct construction in compliance with City of Cudahy Municipal Code Article 23: Environmental Performance Standards.
32. An Affidavit shall be recorded with the Los Angeles County Recorder's Office stating that the lot shall be maintained as a single contiguous lot and certified copy shall be filed with the City Clerk of the City of Cudahy.
33. In the event of transfer of ownership of the property involved in this application, the new owner shall be fully informed of the use of said property as set forth by this approval, together with all conditions, which are a part of, said approval.
34. Issuance of Building Permits shall be conditioned upon submission of Covenants, Conditions and Restrictions (CC&Rs) for review and approval by the City Attorney to ensure that: (i) A homeowners association with legal power to maintain the common areas is established, and (ii) the City is made part of the CC&Rs for the purpose of performing

common area maintenance if the homeowners association fails to do so and to recoup the City's cost of doing so via an assessment imposed on the unit owners, and (iii) copies of the signed CC&Rs shall be recorded in the Los Angeles County Recorder's Office, and a copy given to the City of Cudahy and to each homeowner of the development. A fee must be paid for city attorney review, which shall be equal to 110 percent of costs reasonably borne for document review.

35. All City Fees, i.e., plan check, building permit fees, school fees, Quimby fees, CC&R review, etc., shall be paid by the applicant prior to the submittal of the plans to the Building and Safety Department".
36. The applicant shall adhere to all requested mitigation measures provided by the Los Angeles Unified School District.
37. The applicant shall sign and notarize an Affidavit of Acceptance of Conditions, which acknowledges all of the conditions imposed herein and the applicant's acceptance of this Permit subject to those conditions.
38. The rights granted under DRP No. 41-522 and CUP No. 38-369 may be modified or revoked by the Planning Commission should it be determined that the proposed uses or conditions under which the project is being operated or maintained is detrimental to the public health, welfare or materially harmful to property or improvements in the vicinity, if the property is operated or maintained to constitute a public nuisance or is a contributor to blight, or if the uses on the property are changed from the uses expressly approved herein.
39. The rights granted under DRP No. 41-522 and CUP No. 38-369 shall expire within one (1) year of the date of approval by the Planning Commission unless proper building permits have been obtained or the applicant(s) applies for and is granted an extension of time. No extension of time will be considered unless the application for an extension is filed at least 30 days prior to the expiration. An extension will not be granted if conditions have changed in that the requisite findings for approval can no longer be made.
40. Prior to any occupancy permit being granted, or commencement of the approved use, these conditions shall be completed to the satisfaction of the City.

PASSED AND APPROVED THIS 24TH DAY OF FEBRUARY, 2020 BY THE FOLLOWING ROLL CALL VOTE:

AYES:
NOES:
ABSENT:
ABSTAIN:

Chairman

ATTEST:

APPROVE AS TO FORM:
OLIVAREZ MADRUGA
ASSISTANT CITY ATTORNEY

Salvador Lopez Jr., Deputy Secretary

By: _____
Robert McMurry

Memorandum

TO: Salvador Lopez, Director of Planning

FROM: Christine Kudija, JD, AICP, MLA
Principal Planner

DATE: January 13, 2020

SUBJECT: **4936 Live Oak Street, Cudahy: 20-Unit Infill Apartment Development**
Air Quality/GHG Memorandum

1.0 INTRODUCTION

This Memorandum summarizes the results of the pollutant and greenhouse-gas emissions prepared for the proposed project. As shown below, neither construction emissions nor operational emissions exceed the South Coast Air Quality Management District's thresholds for regional or local emissions. Additionally, because the project increases housing density on an existing infill site, and is within ½ mile of a "major transit stop" on Florence Avenue, the project is considered compliant with respect to greenhouse gas emissions (GHGs) in local and regional climate-action programs.

The applicant proposes to replace the existing residential structures on the 0.81-acre subject property at 4936 Live Oak Street, Cudahy, with a 58-unit, three-story low-rise apartment complex. As part of construction, an approximately 840-square foot existing structure on the project site would be demolished.

2.0 REGULATORY SETTING

2.1. Air Quality. The project is located within the South Coast Air Basin. The South Coast Air Quality Management District (SCAQMD) has jurisdiction and regulatory authority within the Air Basin. The SCAQMD is responsible for the region's Air Quality Management Plan (AQMP), which sets forth regulations and various control measures to reduce air pollution and bring the region into attainment (compliance) with federal and state clean air standards. The 2016 AQMP includes control measures for both stationary and mobile sources of air pollutants; the control measures are further codified into Rules or set forth as policies for jurisdictions within the Air Basin. Rules set specific limits for emissions from various stationary sources, including specific types of equipment, industrial processes, paints, solvents, and consumer products. Limits on airborne "fugitive" dust from construction and particulates from diesel engines are also set forth and enforceable.

To measure ongoing AQMP progress, the SCAQMD monitors air quality at 38 locations throughout the Air Basin, and has enforcement authority over a four-county area (Los Angeles, Orange, Riverside and San Bernardino Counties; see the SCAQMD website, <http://www.aqmd.gov/>, for comprehensive information regarding the AQMP and the SCAQMD's overall responsibilities). The South Coast Air Basin remains in non-attainment under both national and California standards for three criteria pollutants, including ozone, particulate

matter and fine particulate matter (PM10 and PM2.5, respectively). Figure AQ-1 below shows the region's overall attainment status.

Figure AQ - 1

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
1-Hour Ozone	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 Originally 11/15/2010 (not attained) ^{e)}
	CAAQS	1-Hour (0.09 ppm)	Nonattainment	N/A
8-Hour Ozone^{d)}	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Nonattainment (Extreme)	8/3/2038
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
CO	NAAQS	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
NO₂^{e)}	NAAQS	1-Hour (0.10 ppm)	Unclassifiable/Attainment	N/A (attained)
	NAAQS	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment	---
SO₂^{f)}	NAAQS	1-Hour (75 ppb)	Designations Pending (expect Uncl./Attainment)	N/A (attained)
	NAAQS	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM10	NAAQS	1987 24-hour (150 µg/m ³)	Attainment (Maintenance) ^{g)}	7/26/2013 (attained)
	CAAQS	24-hour (50 µg/m ³) Annual (20 µg/m ³)	Nonattainment	N/A
PM2.5^{h)}	NAAQS	2006 24-Hour (35 µg/m ³)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 µg/m ³)	Attainment	8/24/2016
	NAAQS	2012 Annual (12.0 µg/m ³)	Nonattainment (Serious)	12/31/2025
	CAAQS	Annual (12.0 µg/m ³)	Nonattainment	N/A

Figure AQ - 1, Continued

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) Attainment Status for South Coast Air Basin

CRITERIA POLLUTANT	STANDARD	AVERAGING TIME	DESIGNATION ^{a)}	ATTAINMENT DATE ^{b)}
Lead	NAAQS	3-Months Rolling (0.15 µg/m ³)	Nonattainment (Partial) ^{d)}	12/31/2015
Hydrogen Sulfide (H ₂ S)	CAAQS	1-Hour (0.03 ppm/42 µg/m ³)	Attainment	---
Sulfates	CAAQS	24-Hour (25 µg/m ³)	Attainment	---
Vinyl Chloride	CAAQS	24-Hour (0.01 ppm/26 µg/m ³)	Attainment	---

- a) U.S. EPA often only declares Nonattainment areas; everywhere else is listed as Unclassifiable/Attainment or Unclassifiable
- b) A design value below the NAAQS for data through the full year or smog season prior to the attainment date is typically required for attainment demonstration
- c) 1-hour O₃ standard (0.12 ppm) was revoked, effective June 15, 2005 ; however, the Basin has not attained this standard based on 2008-2010 data and is still subject to anti-backsliding requirements
- d) 1997 8-hour O₃ standard (0.08 ppm) was reduced (0.075 ppm), effective May 27, 2008; the revoked 1997 O₃ standard is still subject to anti-backsliding requirements
- e) New NO₂ 1-hour standard, effective August 2, 2010; attainment designations January 20, 2012; annual NO₂ standard retained
- f) The 1971 annual and 24-hour SO₂ standards were revoked, effective August 23, 2010; however, these 1971 standards will remain in effect until one year after U.S. EPA promulgates area designations for the 2010 SO₂ 1-hour standard. Area designations are still pending, with Basin expected to be designated Unclassifiable /Attainment.
- g) Annual PM₁₀ standard was revoked, effective December 18, 2006; 24-hour PM₁₀ NAAQS deadline was 12/31/2006; SCAQMD request for attainment redesignation and PM₁₀ maintenance plan was approved by U.S. EPA on June 26, 2013, effective July 26, 2013.
- h) Attainment deadline for the 2006 24-Hour PM_{2.5} NAAQS (designation effective December 14, 2009) is December 31, 2019 (end of the 10th calendar year after effective date of designations for Serious nonattainment areas). Annual PM_{2.5} standard was revised on January 15, 2013, effective March 18, 2013, from 15 to 12 µg/m³. Designations effective April 15, 2015, so Serious area attainment deadline is December 31, 2025.
- i) Partial Nonattainment designation – Los Angeles County portion of Basin only for near-source monitors. Expect redesignation to attainment based on current monitoring data.

Source: South Coast Air Quality Management District, available at <http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naqs-caaqs-feb2016.pdf?sfvrsn=14> (accessed January 10, 2020).

2.2 Greenhouse Gas Emissions. “Greenhouse gases” (so called because of their role in trapping heat near the surface of the earth) emitted by human activity are implicated in global climate change, commonly referred to as “global warming.” These greenhouse gases contribute to an increase in the temperature of the earth by allowing incoming short wavelength visible sunlight to penetrate the atmosphere, while restricting outgoing terrestrial long wavelength heat radiation from exiting the atmosphere. The principal greenhouse gases (GHGs) include carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). Collectively GHGs are measured as carbon dioxide equivalents (CO₂e).

Fossil-fuel consumption in the transportation sector (on-road motor vehicles, off-highway mobile sources, and aircraft) is the single largest source of GHG emissions, accounting for approximately half of global GHG emissions. Industrial and commercial sources are the second-largest contributors of GHG emissions, constituting about one-fourth of total emissions. According to climate scientists, California and the rest of the developed world must cut emissions by 80 percent from today’s levels to stabilize the amount of CO₂ in the atmosphere and prevent the most severe effects of global climate change.

California has passed several bills and former Governor Jerry Brown signed seven executive orders (EOs) regarding greenhouse gases. GHG Statutes and EOs include Assembly Bill (AB) 32, Senate Bill (SB) 1368, EO S-03-05, EO S-20-06, EO S-01-07, EO S-13-08, EO B-16-12, EO B-18-12, and EO B-30-15. Of these, AB 32, the California Global Warming Solutions Act of 2006, mandates that California’s GHG emissions be reduced to 1990 levels by 2020, and tasks the California Air Resources Board (CARB) with regulating GHG emissions as well as coordinating with other state agencies to implement AB 32’s reduction goals.

EO S-3-05 provides a more long-range goal and requires an 80 percent reduction of GHGs from 1990 levels by 2050. On a per-capita basis, that means reducing annual emissions of 14 MTs of CO₂ equivalent for every person in California down to approximately 10 MTs per person by 2020. Issued in 2015, EO-B-30-15 sets an increasingly-aggressive GHG-emissions target for 2030, 40 percent below 1990 levels. EO-B-30-15 was codified by SB 32 in 2016, which also provided the CARB with additional direction for refining the Climate Change Scoping Plan. That EO set forth five “pillars” for accomplishing GHG reduction, including (1) reducing today’s petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests and wetlands so they can store carbon; and (6) periodically updating the state’s climate adaptation strategy, Safeguarding California.

The CARB’s 2017 Climate Change Scoping Plan, in part implements EO B-30-15, and sets forth a “reference scenario” as a baseline for measuring how much GHG emissions can be reduced in several economic sectors. This scenario illustrates the level of GHG emissions generated statewide through 2030 with existing policies and programs, but without any further action to reduce GHGs. This level is estimated to be approximately 400 million metric tons (MMTs) of CO₂e from all sources in 2030. The CARB’s statewide 2030 target level of emissions is approximately 260 MMTs. **The Scoping Plan estimates that the change from 1990 levels in the residential and commercial sectors must be from 44 MMTCO₂e to 38-40 MMTCO₂e by 2030, a four to eight percent reduction.**

Senate Bill 375 was enacted to link land use and transportation in a manner that would reduce vehicle miles traveled (VMT), thereby reducing GHG emissions. Under SB 375, the California Air

Resources Board (CARB) is responsible for establishing GHG emission-reduction targets, and regional Metropolitan Planning Organizations (MPOs) are responsible for preparing and adopting “Sustainable Communities Strategies” that achieve CARB’s targets.

The Gateway Cities Council of Governments (GCCOG) is the local MPO that includes the City of Cudahy, and has recently prepared a regional CAP framework for member cities as part of a sustainable community strategy. The framework contains a comprehensive toolkit for cities’ use to develop their own CAPs and set emissions targets. To date, the City of Cudahy has not set emissions targets or numeric thresholds. However, the CAP framework itself shows various strategies that can help reduce GHG emissions: promoting “green” building; improving efficiency of existing buildings; increasing the use of local clean energy generation; and others.

As part of the statewide effort to increase local clean energy generation, the California Building Code (Title 24) requires all new single-family and low-rise (≤ 3 stories) multiple family residential construction to add a minimum capacity of photovoltaic power generation, effective January 2020. The California Energy Commission’s *2019 Residential Compliance Manual* sets that capacity according to the following formula:¹

$$kW_{PV} \text{ required} = (CFA \times A)/1000 + (ND_{well} \times B)$$

Where:

- kW_{PV} = kWdc size of the PV system
- CFA = Conditioned Floor Area
- ND_{well} = Number of dwelling units
- A = Adjustment factor from the CEC Residential Compliance Manual Table 7-1, (A= 0.613 for CEC Climate Zone 9)
- B = Dwelling adjustment factor from Residential Compliance Manual Table 7-1, (B=1.36 for CEC Climate Zone 9)

Note that compliance with GHG-reduction strategies may not reduce an individual project’s impacts below significant levels *unless* an emissions target or threshold, based on substantial evidence has been adopted by a local agency. In the absence of a target or threshold, quantified GHG emissions may be determined to be significant and unavoidable. Alternatively, if a project demonstrates consistency with either a local CAP or with the CARB Scoping Plan (such as the percent-reduction goals described above), a finding of “less than significant” may be appropriate.

¹ See California Energy Commission, Residential Compliance Manual, p. 7-1 (January 2019), available at <https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency-0> (accessed January 10, 2020).

4.0 METHODOLOGY

The California Emissions Estimator Model® (CalEEMod) v. 2016.3.2 (Excel-based computer model) was used to estimate the project’s emissions. This computer modeling tool is designed to provide a uniform platform for government agencies, land-use planners, and environmental professionals to quantify potential criteria pollutant and greenhouse gas (GHG) emissions associated with both construction and operations from a variety of land use projects. The model quantifies direct emissions from construction and operation activities (including vehicle use), as well as indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use. Further, the model identifies mitigation measures to reduce criteria pollutant and GHG emissions along with calculating the benefits achieved from measures chosen by the user. The model incorporates average emissions for specific land uses such as that proposed by the project (apartments) at a buildout density of 21.5 du/acre. For modeling purposes, construction was assumed to begin in August 2020, and the project assumed to be operational by the end of 2021. The model requires that particular dates are entered in order to estimate construction phases; if not specifically known, the model inserts default periods for each phase of construction. Figure AQ-2 below shows the SCAQMD’s regional emissions thresholds for various air pollutants. Note that the SCAQMD sets forth greenhouse gas thresholds only for stationary sources.

Additionally, for projects that propose to develop less than five acres of land, the SCAQMD sets localized thresholds for several pollutants that contribute to human cancers. These thresholds substitute for requirements to conduct detailed Health Risk Assessments for small development projects.

Construction and operational greenhouse gas emissions were also estimated using model default values for construction equipment (without mitigation strategies such as lower-emission non-road engines). Mitigation strategies required by the California Building Code were incorporated into the model’s “mitigation” data entry fields to estimate CO₂e emissions during project “operation,” e.g. when new residences are constructed and occupied. These strategies including a minimum level of photovoltaic (solar) electricity-generating capacity and low-flow plumbing fixtures. Moreover, all new residential construction must comply with the California Green Building Standards Code (developed to meet AB 32 GHG-emission goals).

Table GHG-1 shows the estimated GHG emissions for the project, as unmitigated and mitigated by building code requirements. Percent reductions with mitigation are shown for operational emissions. The “unmitigated” emissions would result from a “business-as-usual” strategy of, for example, building a vehicle-dependent, stand-alone multifamily development. In contrast, the “mitigated” emissions show reductions that would be achieved by code compliance.

Figure AQ - 2

SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds ^a		
Pollutant	Construction ^b	Operation ^c
NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
PM2.5	55 lbs/day	55 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor, and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk \geq 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas \geq 1 in 1 million) Chronic & Acute Hazard Index \geq 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO ₂ eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants ^d		
NO ₂ 1-hour average annual arithmetic mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM10 24-hour average annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
PM2.5 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) ^e & 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
SO ₂ 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99 th percentile) 0.04 ppm (state)	
Sulfate 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal)	

^a Source: SCAQMD CEQA Handbook (SCAQMD, 1993)

^b Construction thresholds apply to both the South Coast Air Basin and Coachella Valley (Salton Sea and Mojave Desert Air Basins).

^c For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

^d Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

^e Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million $\mu\text{g}/\text{m}^3$ = microgram per cubic meter \geq = greater than or equal to
 MT/yr CO₂eq = metric tons per year of CO₂ equivalents $>$ = greater than

Source: South Coast Air Quality Management District, *Air Quality Significance Thresholds*, available at <http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf> (accessed January 10, 2020).

Tables AQ-1 and AQ-2 below summarize maximum daily construction and operational emissions for the proposed project, contrasted with SCAQMD thresholds. See Appendix A for full CalEEMod results (annual, winter and summer emissions profiles). Table GHG-1 summarizes greenhouse gas emissions.

Table Abbreviations:

- ROG: Reactive Organic Gases/Volatile Organic Compounds
- NOx: Oxides of Nitrogen
- CO: Carbon Monoxide
- SO2: Sulfur Dioxide
- PM10: Particulate Matter, 10 microns or less
- PM2.5: Fine Particulate Matter, 2.5 microns or less
- Area: Emissions resulting from architectural coatings and 10-year reapplication rates, hearths and woodstoves (none in these projects), consumer products and landscape equipment
- Energy: Emissions resulting from energy generation at power plants attributable to a project
- Mobile: Emissions resulting from projected vehicle trips attributable to a project

**Table AQ - 1
Construction Emissions**

Unmitigated Maximum Daily Construction Emissions						
	ROG (VOC)	NOX	CO	SO2	Total PM10	Total PM2.5
Year	lbs/day					
2020 Winter	67.67	25.98	21.38	0.04	2.93	1.85
2020 Summer	67.67	25.96	21.58	0.04	2.93	1.85
Maximum	67.67	25.98	21.58	0.04	2.93	1.85
Threshold	75	100	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO
Localized Threshold (LST)	N/A	46	231	N/A	4	3
Exceeds Threshold?		NO	NO		NO	NO

**Table AQ - 2
Operational Emissions**

Unmitigated Maximum Daily Operational Emissions						
	ROG (VOC)	NOX	CO	SO2	Total PM10	Total PM2.5
Winter						
	lbs/day					
Category						
Area	1.30	0.06	4.80	2.50e-004	0.03	0.03
Energy	0.03	0.24	0.10	1.53e-003	0.02	0.02
Mobile	0.53	2.32	4.63	0.01	1.06	0.30
Total	1.86	2.61	9.52	0.02	1.12	0.34
Threshold	55	55	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO
Summer						
	lbs/day					
Category						
Area	1.30	0.06	4.80	2.50e-004	0.03	0.03
Energy	0.03	0.24	0.10	1.53e-003	0.02	0.02
Mobile	0.55	2.31	4.65	0.01	1.08	0.30
Total	1.89	2.60	9.55	0.02	1.12	0.34
Threshold	55	55	550	150	150	55
Exceeds Threshold?	NO	NO	NO	NO	NO	NO

**Table GHG-1
Annual GHG Emissions Summary (CO₂e)**

	Phase	Metric Tons (MT) CO₂e/YR		
		Without Mitigation^a	Mitigated^b	Percent Reduction
Totals	Construction	81.86	81.86	0.00%
	Operation	728.76	383.67	47.35%

“Without Mitigation” for CalEEMod purposes means that estimated future project building construction and operational data were entered without adjusting for equipment engine emissions or operational features required in the California Building Code (Title 24). This is essentially the “business as usual” scenario.

“Mitigation” for CalEEMod purposes can mean inherent design features of a project, such as increasing a project’s “walkability,” thus reducing vehicle trips. Since the proposed project increases residential density in an area close to transit, shops, restaurants and services, increasing walkability is already a component of the project, not a necessary mitigation measure. Also included as “mitigation” were other features of future construction that are required by the California Building code, such as minimum levels of solar-energy generation on each residential building, water-conserving plumbing and irrigation systems, and adherence to green building standards.

5.0 Conclusions

As shown by Tables AQ-1 and AQ-2, and further detailed in the CalEEMod results in Appendix A, neither the construction nor the operational phases of the proposed project exceed SCAQMD thresholds. Additionally, Table GHG-1 shows that the project's operational emissions are estimated to result in GHG-emissions reduction from business-as-usual by 47%, substantially exceeding CARB's four to eight-percent goals noted above. Accordingly, the project's air quality and greenhouse gas impacts may be considered less-than-significant.

Memorandum

TO: Sal Lopez, Director of Planning

FROM: Joanne Itagaki, Project Manager 

DATE: January 6, 2020

SUBJECT: City of Cudahy, 4936 Live Oak Street, Trip Generation Analysis

It is my understanding that a 58-unit multifamily residential development (apartment complex) is proposed to be built at 4936 Live Oak Street where 1 single-family detached home will be demolished. Concerns have been expressed that there is a need for a Traffic Impact Analysis (TIA) to fully determine the traffic impacts of the proposed development.

Cudahy, like many cities in Los Angeles County, looks to guidelines provided by Metro's Congestion Management Program (CMP), Appendix D in determining when a TIA should be conducted. The CMP indicates that a proposed project adding 50 or more peak hour trips (both directions) in either the AM or PM peak period should conduct a TIA.

The County of Los Angeles, Public Works also provides guidelines regarding TIA. The County threshold is a proposed project that adds 500 or more trips per day.

Table 1 provides the trip generation analysis of the proposed 58-unit apartment complex. This table also accounts for the demolition of the 1 single-family detached home by removing/subtracting those trips. As identified in **Table 1**, the net trips from the project site include: 415 daily trips (208 in/208 out); 26 AM peak trips (6 in/20 out); and, 31 PM peak trips (20 in/12 out)*. The net trips fall below the thresholds of Metro and the County. Therefore, a traffic impact analysis would not be required of the proposed project based on these thresholds.

Should you have any questions, please contact me.

* - Trip totals are rounded to whole numbers. Therefore, totals may not appear to be mathematically correct.

Attachments

- Table 1 – Trip Generation Analysis

City of Cudahy
Table 1
4936 Live Oak Street
Trip Generation Analysis

10th Edition ITE Land Use Codes

Code 220 - Multifamily Housing (Low Rise)

This Code used for the 58 apartment units as this was the only multifamily use Code used in the City's 2017 General Plan Traffic Impact Analysis.

Code 210 - Single-Family Detached Housing

This Code used for the existing single-family home to be removed.

		Daily				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 58 unit apartments	58	7.32	50/50	212	212	425
Existing 1 unit single-family home to be removed	1	9.44	50/50	-5	-5	-9
Net Daily Trips				208	208	415

		AM Peak of Street				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 58 unit apartments	58	0.46	23/77	6	21	27
Existing 1 unit single-family home to be removed	1	0.74	25/75	0	-1	-1
Net AM Peak Trips				6	20	26

		PM Peak of Street				
(Rates per # of Dwelling Units)	Dwelling Units	Rate	In/Out %	In Trips	Out Trips	Total Trips
Proposed 58 unit apartments	58	0.56	63/37	20	12	32
Existing 1 unit single-family home to be removed	1	0.99	63/37	-1	0	-1
Net AM Peak Trips				20	12	31

Note: Trip totals are rounded to whole numbers. Therefore, totals may not appear to be mathematically correct.