Fullerton Municipal Airport
New Terminal Building Project

DRAFT INITIAL STUDY – NEGATIVE DECLARATION

JULY 2020

Prepared by

C&S Companies
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City of Fullerton
Initial Study Checklist Form

1. Project title: New Airport Terminal Building
   Project Number: 49009

2. Lead agency name and address:
   City of Fullerton
   City of Fullerton Public Works
   303 West Commonwealth Avenue
   Fullerton, California 92832-1775

3. Contact person and phone number:
   David Grantham, P.E., Senior Civil Engineer
   City of Fullerton Public Works - Engineering
   303 West Commonwealth Avenue
   Fullerton, California 92832-1775

4. Project location:
   Fullerton Municipal Airport
   4011 West Commonwealth Avenue
   Fullerton, California 92833

   (Reference **Figure 1 – Regional Location** and **Figure 2 – Project Location**)

   Legal Description:

   Assessor Parcel Number (APN): 030-010-45 (proposed project APN), 030-010-44, 030-010-49, 030-010-50, 030-040-09, 030-052-20, 030-052-02, 030-052-03, 030-051-31, 030-051-30

5. Project sponsor's name and address:
   David Grantham, P.E., Senior Civil Engineer
   City of Fullerton Public Works - Engineering
   303 West Commonwealth Avenue
   Fullerton, California 92832-1775

6. General plan designation: The Fullerton Plan identifies the Airport as an Airport Industrial focus area designated as Public Land with future development potential for Industrial and Government purposes. Secondary uses include Medium Density Residential, Commercial, and Office, as appropriate.

7. Zoning: Public Land (P-L) for entire airport property, General Commercial (G-C) to the southwest of airport property, and Manufacture-General (M-G) to the southeast of airport property (north of Magnolia Avenue).

8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

   The proposed project consists of the construction of a new 7,950 square foot (SF) two-story terminal building with associated site and parking lot modifications. The purpose of the proposed project is to expand the capacity of the current terminal building to accommodate the existing needs of the Airport. The first floor of the proposed project will contain offices that will be utilized by existing staff. The second floor will hold multipurpose rooms (1,600 SF) that will be used for meetings and/or events.

   Additionally, the proposed project will involve relocating the existing driveway as well as installing additional parking spaces, remarking existing parking spaces, and modifying the sidewalks. Existing utilities will be

extended to service the proposed project and will act as an extension of the existing terminal building.

9. Surrounding land uses and setting: Briefly describe the project's surroundings:

   The proposed project will take place on designated Public Land on Airport property. The Airport is immediately surrounded by industrial land uses on all sides with some residential to the southeast of Runway 24 end and to the west of Runway 6 end. Land uses surrounding the Airport to the north include industrial and residential with designated park areas.

   The the south, a mix of residential, industrial, and commercial but, mostly residential especially east of the airport on Pritchard Avenue. There is predominately industrial land uses to the south of Malvern Avenue and west of Gillbert Street. The west of the Airport is a mix of commercial and residential land uses with some industrial.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

    City of Fulleron
    - Water Quality Management Plan
    - Building Permit

    State Water Resources Control Board
    - Storm Water Pollution Prevention Plan (SWPPP) approval

    Regional Water Quality Control Board
    - Water Quality Certification

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun?

    Consultation with the Gabrieleño Band of Mission Indians – Kizh Nation was initiated through written consultation from the tribe.The Lead Agency met with the Gabrieleño Band of Mission Indians – Kizh Nation on April 15, 2020 to discuss any concerns the tribe may have and to provide additional information on the proposed project as needed. The Gabrieleño Band of Mission Indians – Kizh Nation identified that the project site is located within and around a sacred village (Hutukngna), adjacent to sacred water courses and major traditional trade routes. Recommendations provided by the Gabrieleño Band of Mission Indians – Kizh Nation have been incorporated into this report. See Appendix A for the letters of notification sent to all California Native American tribes affilitated with the proposed project area.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Tribal Cultural Resources	☐ Utilities / Service Systems
☐ Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency) On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

_____ _____

Signature Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.

   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS - Would the project:				
a) Have a substantial adverse effect on a scenic vista?			X	
A scenic vista combines the words scenic and vista to describe an expansive view that has visual and/or aesthetic qualities of importance to a community. The City of Fullerton's *The Fullerton Plan* (Plan) identifies four designated Open Space/Habitat Conservation areas in and around the City; Hawks Pointe Easement, Robert E. Ward Nature Preserve, Coyote Hills West Preserve, and Coyote Hills East Preserve (The Plan,2012). The areas listed are located to the north/northeast of Airport property over a mile away. Additionally, to the north/northeast of the Airport the Plan, identifies multiple scenic corridors within a mile of Airport property. Scenic corridors are defined as land adjacent to a road right-of-way, which, when seen from the road, provides outstanding views of natural landscapes and aesthetic man-made development. The proposed project consists of the construction of a new terminal building with associated parking adjacent to the existing terminal building on Airport property. The new building facility will comply with building Height Restriction Zones, and construction will take place entirely on Airport property. Height Restriction Zones are based on the Federal Aviation Regulations Part 77 (FAR Part 77) entitled "Objects Affecting Navigable Airspace" that sets forth guidelines for height limits (The Fullerton Plan, 2012). The proposed project would not obscure the view of any scenic vistas or scenic corridors from the general public. Therefore, less than significant impacts to scenic vistas would occur and no mitigation is required.				
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
The proposed project would take place entirely on Airport property where there are no eligible or officially designated state or local highways adjacent to the site. The closest officially designated scenic highways are the State Route 91and 55 highways located approximately 0.5 miles south of the Airport and approximately 8.5 miles southeast of the Airport, respectively. Therefore, the proposed project would have no impact on scenic resources within a state scenic highway.				
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
The proposed project would comply with zoning and building restrictions present at the Airport as well as be compatible with existing facilities. The proposed project would be constructed on existing pavement. Therefore, the proposed project would have no impact to the existing visual character or quality of the site and its surroundings.				
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	
The proposed project would create temporary new sources of light or glare during construction and would not create a substantial new source of light or glare once implemented. The proposed project consists of the construction of a new terminal building with associated parking adjacent to the existing terminal building on Airport property. The new building facility will comply with building Height Restriction Zones and construction would take place entirely on Airport property. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
II. AGRICULTURE AND FORESTRY RESOURCES - Would the project:				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
The proposed project would be constructed on previously disturbed paved areas on Airport property and will not convert land identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. Therefore, the proposed project would have no impact on land identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.				
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
According to the Airport Environs Land Use Plan (AELUP) as part of the Plan, the Airport property is zoned as Public Land and adheres to Public Utilities Code Section 21676 and specific Height Restriction Zones. The Airport property is not zoned for agricultural use or a Williamson Act contract; therefore, the proposed project would have no impact.				
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
Refer to response to Section II (b) above.				
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
The proposed project would be constructed on previously disturbed paved areas on Airport property and would not result in the loss of forest land or convert forest land to non-forest use. Therefore, the proposed project would have no impact on the loss or conversion of forest land.				
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				X
Refer to response to Sections II (b andd) above.				

III. AIR QUALITY - Would the project:

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

a) Conflict with or obstruct implementation of the applicable air quality plan?			X	

An Air Quality Analysis was conducted to measure construction and operational emissions associated with the proposed project. Total emissions are compared to the National Ambient Air Quality Standards (NAAQS) in order to determine a project's impact on air quality. The proposed project is anticipated to cause a temporary increase in emissions during construction as well as an increase to operational emissions from mobile and stationary sources once implemented.

The proposed project would take place in Orange County as part of the South Coast Air Quality Management District (SCAQMD) that is designated as non-attainment for one-hour ozone, eight-hour zone, PM_{10} and $PM_{2.5}$. Table 1 below summarizes the emissions increase to state and federal thresholds for all nonattainment and maintenance parameters.

Table 1 – Criteria Pollutant Emissions Summary

Source	CO	VOC	NOx	SOx	PM2.5	PM10
Federal Thresholds (tons/year)	***100***	***10***	***10***	***N/A***	***100***	***100***
2020 Emissions (tons per year)	1.5872	0.2699	1.7410	0.0030	0.0976	0.1397
2021 Emissions (tons per year)	3.1121	0.2687	0.9951	0.0122	0.3100	1.1339

***State Thresholds (Construction)* (lbs/day)**	***550***	***75***	***100***	***150***	***55***	***150***
Summer Construction Emissions (lbs/day)	15.3274	10.0865	21.3265	0.0302	3.6821	6.6550
Winter Construction Emissions (lbs/day)	15.3188	10.0880	21.3483	0.0301	3.6821	6.6550
State Thresholds (Operational) (lbs/day)	***550***	***55***	***55***	***150***	***55***	***150***
Summer Operational Emissions (lbs/day)	24.6876	2.0409	7.2724	0.0966	2.4200	8.8746
Winter Operational Emissions (lbs/day)	23.5525	2.0098	7.4787	0.0923	2.4203	8.8749

Federal Thresholds Source: 40 CFR 93.153(b)(1) & (2)

State Thresholds Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Accessed on December 18, 2019. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf

The proposed project's increase in total emissions would be below applicable *de minimis* federal and state thresholds for both nonattainment and maintenance parameters. Therefore, the proposed project would have a less than significant impact no mitigation required and conform to the state implementation plan. The Air Quality Analysis is attached to this document as Appendix B.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			X	

Refer to response to Section III (a) above.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	

Refer to response to Section III (a) above.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Expose sensitive receptors to substantial pollutant concentrations?			X	
Refer to response to Section III (a) above.				
e) Create objectionable odors affecting a substantial number of people?			X	
The proposed project has the potential to create temporary odors associated with construction activities. However, the odors would be temporary in nature and would not affect a substantial number of people. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
IV. BIOLOGICAL RESOURCES - Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?			X	
According to the U.S Fish and Wildlife Service's list of threatened and endangered species, there are no critical habitats found within the proposed project area. The list identified two species with the potential to occur within Orange County; Coastal California Gnatcatcher (*Polioptila californica californica*), and Ventura Marsh Milk-vetch (*Astragalus pycnostachyus var. lanosissimus*). The proposed project site is located within the footprint of existing paved and landscaped surfaces and does not support the habitat for any of the above species. The California Department of Fish and Wildlife lists five species with the potential to occur within Orange County; Swainson's Hawk (*Buteo swainsoni*), Western Yello-billed Cuckoo (*Coccyzus americanus occidentalis*), California Black Rail (*Laterallus jamaicensis coturniculus*), Crotch Bumble Bee (*Bombus crotchii*), Gambel's Water Cress (*Nasturtium gambelii*). The proposed project site is located within the footprint of existing paved and landscaped surfaces and does not support the habitat for any of the above species. Therefore, the proposed project would have a less than significant impact with no mitigation required for any of the identified species due to the lack of viable habitat in or around the proposed project area.				
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				X
The U.S Fish and Wildlife Service and the California Department of Fish and Game identified no known riparian habitat or other sensitive natural communities within the proposed project area. The proposed project site is located within the footprint of existing paved and landscaped surfaces and does not support riparian habitat or other sensitive natural communities. Therefore, the proposed project would have no impact on riparian habitat or other sensitive natural communities.				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
According to the National Wetlands Inventory Mapper, there are no known federally protected wetlands in or around the proposed project area. The closest riverine habitat is the Fullerton Creek located approximately 0.5 miles south of the proposed project area. Therefore, the proposed project would have no impact to federally protected wetlands.				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			X	

The U.S. Fish and Wildlife Service identified seven species of migratory birds protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The listed species include, Allen's Hummingbird (*Selasphorus sasin*), Costa's Hummingbird (*Calypte costae*), Long-billed Curlew (*Numenius americanus*), Rufous Hummingbird (*Selasphorus rufus*), Tricolored Blackbird (*Agelaius tricolor*), Whimbrel (*Numenius phaeopus*), Wrentit (*Chamaea fasciata*). The proposed project site is located within the footprint of existing paved and landscaped surfaces and does not support the habitat for any of the above species. The proposed project would take place entirely on Airport property and is not anticipated to have the potential to take birds protected by the Migratory Bird Treaty Act. Therefore, the proposed project would have a less than significant impact with no mitigation required for any of the species identified.				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
The proposed project would take place entirely on Airport property and is compatible with existing facilities. Therefore, the proposed project would have no impact on any local policies or ordinances protecting biological resources.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
The proposed project would take place entirely on Airport property and is compatible with existing facilities. The closest Habitat Conservation Plan areas are the Hawks Pointe Easement and Robert E. Ward Nature Preserve located approximately two miles north of the proposed project site (The Plan, 2012). Therefore, the proposed project would have no impact on any provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES - Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?			X	
According to the City of Fullerton Local Register of Historical Resources, there are no listed properties located on Airport property (The Plan, 2012). The proposed project will be constructed on existing paved surfaces on Airport property and consists of the construction of a new terminal building and associated parking spaces. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil that would impact a historical resource. However, upon the discovery of any historical resources, construction activities will cease at a minimum of 150 feet in the immediate vicinity of the find until the find can be assessed by a Gabrieleño Band of Mission Indians – Kizh Nation approved Tribal Monitor. Further detail regarding monitoring measures, resource assessment, and continuation of work protocol will be included in the construction documents.Therefore, the proposed project would have a less than significant impact with no mitigation required.				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
The proposed project would be constructed on existing paved surfaces on Airport property. The 2012 Fullerton Plan PEIR (2012), identified that there was no presence of Native American cultural resources within 0.5 miles of the City of Fullerton through a sacred land file search conducted by the Native American Heritage Commission. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil that would expose unidentified archaeological resources during construction. However, upon the discovery of any archaeological resources, construction activities will cease at a minimum of 150 feet in the immediate vicinity of the find until the find can be assessed by a Gabrieleño Band of Mission Indians – Kizh Nation approved Tribal Monitor. Further detail regarding monitoring measures, resource assessment, and continuation of work protocol will be included in the construction documents.Therefore, the proposed project would have a less than significant impact with no mitigation required.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
The proposed project would be constructed on existing paved surfaces on Airport property. The Fullerton Plan PEIR (2012), identified that no significant paleontological sites have been documented within the City. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil that would expose unidentified paleontological sites or fossil resources during construction. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
d) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	
The proposed project would be constructed on existing paved surfaces on Airport property. The Fullerton Plan PEIR (2012), identified that human remains are unlikely to be found within the City due to heavy development. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil that would disturb any human remains during construction. Therefore, the proposed project will have a less than significant impact with no mitigation required.				
VI. GEOLOGY AND SOILS - Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
The California Department of Conservation's California Earthquake Hazards Zone Application (EQ Zapp) map that determines whether a property lies within any of the California Geological Survey's (CGS's) mapped earthquake hazard zones. The proposed project does not lie within an Earthquake Fault Zone; however, there are fault zones to the northeast and southwest approximately six miles and 12 miles, respectively. The proposed project would be constructed in accordance with all applicable federal, state, and local codes regarding seismic requirements. Therefore, the proposed project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving the rupture of a known earthquake fault; no impact would occur.				

ii) Strong seismic ground shaking?			X	

Seismic activity is quite common to southern California; although no faults have been mapped within the project area, the Airport and surrounding area are still susceptible to damage from nearby earthquake eruptions. The Fullerton Plan includes goals and policies for the protection of people, natural and built environments and the economy from natural hazards. The following goal states:
Goal 26: Protection of people, natural and built environments and economy from natural hazards.

P26.5 Hazard Specific Development Regulations
Support projects, programs, policies and regulations to utilize hazard specific development regulations to mitigate risks associated with identified potential natural hazards, including flooding, wildland fires, liquefaction, and landslides when development does occur.

The proposed project would be constructed in accordance with all applicable federal, state, and local codes regarding seismic requirements. Therefore, the proposed project would have a less than significant impact with no mitigation required to seismic activity.

iii) Seismic-related ground failure, including liquefaction?			X	

The California Department of Conservation's EQ Zapp map identified the entire Airport property as existing within a liquefaction zone. According to the City of Fullerton Local Hazard Mitigation Plan (2010), liquefaction susceptibility is considered high throughout the City. However, there are no current records of seismically induced liquefaction occurring in the City of Fullerton (City of Fullerton Local Hazard Mitigation Plan, 2010). The proposed project would take place entirely on Airport property and is compatible with existing facilities. The proposed project would be constructed in accordance with all applicable federal, state, and local codes regarding seismic requirements. Therefore, the proposed project would have a less than significant impact with no mitigation required.

iv) Landslides?				X

The California Department of Conservation's EQ Zapp map determined that the Airport property does not lie within a landslide zone. The proposed project would be constructed in accordance with all applicable federal, state, and local codes regarding seismic requirements. Therefore, the proposed project would have no impact .

b) Result in substantial soil erosion or the loss of topsoil?				X

The proposed project would be constructed on existing paved surfaces on Airport property. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil. Fugitive dust as well as any erosion accumulated through construction would be handled in compliance with SCAQMD Rules and the City's requirements for best management practices (BMPs). Therefore, the proposed project would have no impact on creating substantial soil erosion or loss of topsoil.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?			X	

There are two distinct geological areas to the north and south that constitute the City of Fullerton. The northern portion of the City is comprised of gently rising foothills, steep slopes, and scenic vistas. The southern portion of the City consists of flat land with gradual downward slopes to the south and west (City of Fullerton Local Hazard Mitigation Plan, 2010). The formations underlying the City are composed of sandstone, siltstone, and conglomerate beds with weak jointing. Historically, the City has not been very geologically active, however, the potential for lateral spreading, subsidence, and liquefaction exists.

The proposed project would take place entirely on Airport property on previously disturbed paved surfaces. The proposed project would be constructed in accordance with the California Building Code, the Fullerton Municipal Code, and additional applicable federal, state, and local codes to ensure the safe construction of the facility. Therefore, the proposed project would have a less than significant impact with no mitigation required.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
The proposed project site has been disturbed through grading, fill, and pavement. The site is currently paved and resides entirely on Airport property. The proposed project would be constructed in accordance with the California Building Code, the Fullerton Municipal Code, and additional applicable federal, state, and local codes to ensure the safe construction of the facility. Therefore, the proposed project would have no impact.				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
The proposed project would not involve the use of septic tanks or other alternative disposal systems. Therefore, the proposed project will have no impact.				
VII. GREENHOUSE GAS EMISSIONS - Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
An Air Quality Analysis was conducted to measure construction and operational emissions associated with the proposed project. Greenhouse gas emissions (GHGs) were calculated for the proposed project for carbon dioxide, methane, and nitrous oxide. The carbon dioxide equivalent emissions calculated for the proposed project during operation is approximately 1,191 metric tons. The proposed project will take place within the SCAQMD where the South Coast AQMD CEQA handbook puplished a threshold of 10,000 MT/year of CO_2e for industrial facilities; the proposed project emissions will be under this threshold (see Appendix B – Air Quality Analysis). Therefore, the proposed project would have a less than significant impact with no mitigation required.				
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	
There are currently no federal or state requirements for reporting GHGs from aviation sources and/or no significance thresholds. The proposed project would take place within the SCAQMD where the South Coast AQMD CEQA handbook puplished a threshold of 10,000 MT/year of CO_2e for industrial facilities; the proposed project emissions will be under this threshold (see Appendix B – Air Quality Analysis). Therefore, the proposed project would have a less than significant impact with no mitigation required and comply with applicable plans, policies, and regulations.				
VIII. HAZARDS AND HAZARDOUS MATERIALS - Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
The proposed project consists of the construction of a new terminal building with associated parking alterations on existing pavement at the Airport. The proposed project would not create conditions likely to produce a significant increase in solid waste collection, control, or disposal other than temporary waste associated with construction activities. Additionally, the proposed project would be compatible with existing facilities at the Airport. Construction debris associated with the proposed project will be disposed of consistent with federal, state, and local regulations. A Soil Management Plan (SMP) will be prepared for the proposed project and implemented during construction. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
Refer to response to Section VIII (a) above.				

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?			X	
The proposed project would not create conditions likely to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste other than temporary waste associated with construction activities within one-quarter mile of an existing or proposed school. The closest school to the proposed project is Fullerton Rainbow Preschool approximately 0.3 miles southeast. Additionally, the proposed project would be compatible with existing facilities at the Airport. Construction debris associated with the proposed project will be disposed of consistent with federal, state, and local regulations. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
The California Department of Toxic Substances Control EnviroStar maps and lists sites that have been identified as containing hazardous waste and substances. According to EnviroStar, Fullerton Municipal Airport is not listed as a site that contains or has contained hazardous materials. Therefore, the proposed project would have no impact on creating a significant hazard on the public or the environment.				
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?			X	
The proposed project would take place entirely on Airport property and is compatible with existing facilities. The proposed project consists of the construction of a new terminal building with associated parking alterations on existing pavement at the Airport. The Airport is zoned as Public Use in an urban environment surrounded by industrial/commercial, and residential land uses. The proposed project would comply with applicable federal, state, and local regulations including California Health and Safety Code and Occupational Safety and Health Act. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
The proposed project will take place entirely on puplic Airport property. Therefore, the proposed project would have no impact.				
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
The proposed project would take place entirely on public Airport property and is compatible with existing facilities. The proposed project consists of the construction of a new terminal building with associated parking alterations on existing pavement at the Airport. The Airport is utilized as a staging area for CalFire operations and all construction schedules, staging areas and haul routes will be coordinated in the design phase to avoid any operational impacts. The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; therefore, the proposed project would have no impact.				
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
The land uses immediately surrounding the Airport property consist of industrial/commercial and residential land uses not adjacent to or intermixed with wildlands. The proposed project would take place entirely on public Airport property and is compatible with existing facilities. Therefore, the proposed project would have no impact on exposing people or structures to a significant risk of loss, injury or death involving wildland fires.				

IX. HYDROLOGY AND WATER QUALITY - Would the project:

a) Violate any water quality standards or waste discharge requirements?			X	

A Water Quality Management Plan (WQMP) was prepared for the proposed project at Fullerton Municipal Airport in October 2019 by Chang Consultants. The WQMP analyzed water quality standards and determined best management practices (BMPs) requirements. Existing storm runoff flows south to West Commonwealth Ave and ultimately flows to Fullerton Creek, Coyote Creek, the San Gabriel River, and the Pacific Ocean. These channels were identified as public, engineered, hardened systems subject to public agency maintenance, and not required to include hydro-modification BMPs.

Due to shallow groundwater, infiltration is not feasible. Alternatively, the runoff from the proposed project would enter a vegetated filter strip, which will act as a LID biotreatment BMP. Inspections during routine landscape maintenance is recommended. With these requirements in place, the proposed project would not violate any water quality standards or waste discharge requirements. Therefore, the proposed project would have a less than significant impact with no mitigation required.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre- existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X

The proposed project site would not utilize groundwater supplies due to shallow groundwater levels. Therefore, the proposed project would have no impact.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X

The proposed project site would tie into the existing drainage patterns without a need for alterations. Therefore, the proposed project would have no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X
Refer to response to Section IX (a) above.				
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X	
Refer to response to Section IX (a) above.				
f) Otherwise substantially degrade water quality?				X
Refer to response to Section IX (a) above.				
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
The proposed project would take place entirely on public Airport property and is compatible with existing facilities. The proposed project consists of the construction of a new terminal building with associated parking alterations on existing pavement at the Airport. No housing would be developed as part of the proposed project; therefore, the proposed project would have no impact.				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
According to the FEMA Flood Map Service Center, the Airport resides in an area with a 0.2 percent annual chance of flood hazard. The proposed project would not take place in a 100-year flood hazard area. Therefore, the proposed project would have no impact to flood hazard zones.				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
Refer to response to Section IX (h) above.				
j) Inundation by seiche, tsunami, or mudflow?				X
Refer to response to Section IX (h) above.				
X. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?				X
The proposed project would take place entirely on Airport property and is compatible with existing facilities and land use. Therefore, the proposed project will have no impact on physically dividing an established community.				

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
According to the AELUP as part of the Plan, the Airport property is zoned as Public Land and adheres to Public Utilities Code Section 21676 and specific Height Restriction Zones. The proposed project will take place entirely on Airport property and would be compatible with existing facilities. Therefore, the proposed project would have no impact on any applicable land use plans, policies, or regulations of an agency with jurisdiction over the project.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
The U.S Fish and Wildlife Service and the California Department of Fish and Game identified no known habitat conservation plans or other sensitive natural communities with conservation plans within the proposed project area. The proposed project site is located within the footprint of existing paved and landscaped surfaces and does not support habitat or other sensitive natural communities. The closest habitat conservation plan area is the East Coyote Hills Habitat approximately five miles northeast of the Airport (The Fullerton Plan, 2012). Therefore, the proposed project would have no impact on applicable habitat conservation plans or other sensitive natural community plans.				
XI. MINERAL RESOURCES - Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
The Fullerton Plan, Chapter 19, does not identify any areas designated as Mineral Resource Zones. The proposed project would take place entirely on Airport property and would not result in the loss of any known mineral resources. Therefore, the proposed project would have no impact on a known mineral source.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
Refer to response to Section XI (a) above.				
XII. NOISE - Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
A Construction Noise Analysis was conducted for the proposed project at Fullerton Municipal Airport. The report identified residential land uses surrounding the Airport as noise-sensitive land uses (NSLUs) that may be subject to stress and/or interference from excessive noise. The City of Fullerton Municipal Code Chapter 15.90.030 (Noise standards) and 15.90.050 (Activities with special provisions) limits exterior noise levels at residential properties and exempts construction noise from its noise standards with provisions, respectively. Provisions for exterior noise levels for residential properties are 55 dBA between 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m. Construction noise is exempt between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday. The construction of the proposed project would occur within the specified hours in the City's Municipal Code, therefore, not resulting in a violation of the City's construction noise standards. Therefore, the proposed project would have a less than significant impact with no mitigation required. The report is attached to this document as Appendix C.				
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			X	
According to the report, a vibratory roller would be the main source of vibration during the construction of the proposed project. The California Department of Transportation's (Caltrans') Transportation and Construction Vibration Guidance Manual limits distinctly perceptible vibration annoyance potential criteria to 0.04 in/sec PPV for continuous and frequent intermittent sources. The vibratory roller would create a PPV of 0.03 in/sec less than the limit; therefore, the proposed project would have a less than significant impact with no mitigation required for vibration impacts.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
Noise generated from the construction of the proposed project would be temporary in nature and would not permanently increase ambient noise levels once the proposed project is implemented. Therefore, the proposed project would have no impact to ambient noise levels.				

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
Noise generated from the construction of the proposed project would be temporary in nature and would not permanently increase ambient noise levels once the proposed project is implemented. Therefore, the proposed project would have a less than significant impact with no mitigation required to ambient noise levels.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?			X	
The proposed project would take place entirely on public Airport property and is compatible with existing facilities. The proposed project consists of the construction of a new terminal building with associated parking alterations on existing pavement at the Airport. Construction noise is exempt between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday. The construction of the proposed project would occur within the specified hours in the City's Municipal Code, therefore, not resulting in a violation of the City's construction noise standards. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
Refer to response to Section XII (e) above.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING - Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
The proposed project would take place entirely on Airport property and is proposed in order to adequately meet the facility needs of the Airport. The proposed project involves the construction of a new terminal building and associated parking spaces. The proposed project does not have the capacity to induce substantial population growth either directly or indirectly; therefore, the proposed project would have no impact to induce substantial population growth either directly or indirectly.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
The proposed project would take place entirely on Airport property and is compatible with existing facilities at the Airport. The Airport is zoned as Public Use with no residential land use designations on the property. Therefore, the proposed project would have no impact on the displacement of substantial numbers of existing housing.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
Refer to response to Section XIII (b) above.				
XIV. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				X
The proposed project would take place entirely on Airport property and is proposed in order to adequately meet the facility needs of the Airport. The proposed project involves the construction of a new terminal building and associated parking spaces. The Airport is utilized as a staging area for CalFire and the Orange County Fire Authority (helicopter operations) and all construction schedules, staging areas and haul routes will be coordinated in the design phase to avoid any operational impacts. The proposed project does not have the capacity to result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or any of the above public services. Therefore, the proposed project would have no impact.				
Police protection?				X
The proposed project would take place entirely on Airport property and is proposed in order to adequately meet the facility needs of the Airport. The proposed project involves the construction of a new terminal building and associated parking spaces. The California Highway Patrol and the Anaheim Police Department utilize the Airport for helicopter related operations and all construction schedules, staging areas and haul routes will be coordinated in the design phase to avoid any operational impacts. The proposed project does not have the capacity to result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or any of the above public services. Therefore, the proposed project would have no impact.				
Schools?				X
Refer to response to Section XIV (a) above.				
Parks?				X
Refer to response to Section XIV (a) above.				
Other public facilities?				X
Refer to response to Section XIV (a) above.				

XV. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The proposed project would take place entirely on Airport property and is not anticipated to significantly increase the use of existing neighborhood and regional parks or other recreational facilities that would lead to the deterioration of the facility. Therefore, the proposed project would have no impact.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			X	
The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The second floor of the proposed project has a multipurpose room that can be utilized as a recreational facility by the public. However, the proposed project would take place entirely on Airport property and no adverse physical effects on the environment are anticipated. Therefore, the proposed project would have a less than significant impact no mitigation required.				
XVI. TRANSPORTATION/TRAFFIC - Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?			X	
The proposed project involves the construction of a new terminal building along with parking lot modifications. A traffic study was conducted to analyze the potential effects of the proposed project. The traffic study analyzed five intersections, three signalized and two unsignalized two-way stop control utilizing the Highway Capacity Manual by the Transportation Research Board to determine the vehicle Level of Service (LOS). According to the traffic study, the proposed project once implemented would have minor increases in delay for approaches but, no changes to LOS values. The proposed project would have no effect on pedestrian and bicyclist LOS. Additionally, although no mitigations are proposed, the project would be required to pay traffic fees for intersection improvements within the City. Therefore, the proposed project would have a less than significant impact with no mitigation required. The traffic study is attached to this document as Appendix D.				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			X	
Refer to response to Section XVI (a) above.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
Although the proposed project would take place on Airport property, there will be no changes to air traffic patterns or an increase in traffic levels. The proposed project involves the construction of a new terminal building along with parking lot modifications. Therefore, the proposed project will have no impact.				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				X
The proposed project involves the construction of a new terminal building along with parking lot modifications. The proposed project is not anticipated to increase hazards or incompatible uses. Therefore, the proposed project would have no impact.				
e) Result in inadequate emergency access?				X
The proposed project involves the construction of a new terminal building along with parking lot modifications. The Airport is utilized as a staging area for CalFire, the Orange County Fire Authority (helicopter operations), the California Highway Patrol and the Anaheim Police Department. All construction schedules, staging areas and haul routes will be coordinated in the design phase to avoid any operational impacts. Therefore, the proposed project would have no impact on emergency access.				

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?			X	
Refer to response to Section XVI (a) above.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES.				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or			X	
According to the City of Fullerton Local Register of Historical Resources on Table 6 of The Plan, there are no listed properties located on Airport property. The proposed project will be constructed on existing paved surfaces on Airport property and consists of the construction of a new terminal building and associated parking spaces. However, upon discovery of any potential historical resources, construction activities will cease at a minimum of 150 feet in the immediate vicinity of the find until the find can be assessed by a Gabrieleño Band of Mission Indians – Kizh Nation approved Tribal Monitor. Further detail regarding monitoring measures, resource assessment, and continuation of work protocol will be included in the construction documents. Therefore, the proposed project would have a less than significant impact on the significance of a historical resource.				
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision			X	
Refer to response to Section XVII (a) above.				
c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.			X	
Consultation with the Gabrieleño Band of Mission Indians – Kizh Nation was initiated through written consultation from the tribe.The Lead Agency met with the Gabrieleño Band of Mission Indians – Kizh Nation on April 15, 2020 to discuss any concerns the tribe may have and to provide additional information on the proposed project as needed. The Gabrieleño Band of Mission Indians – Kizh Nation identified that the project site is located within and around a sacred village (Hutukngna), adjacent to sacred water courses and major traditional trade routes. The proposed project will be constructed on existing paved surfaces on Airport property and consists of the construction of a new terminal building and associated parking spaces. However, upon discovery of any historical and/or archaeological resources, construction activities will cease at a minimum of 150 feet in the immediate vicinity of the find until the find can be assessed by a Gabrieleño Band of Mission Indians – Kizh Nation approved Tribal Monitor. Further detail regarding monitoring measures, resource assessment, and continuation of work protocol will be included in the construction documents. Therefore, the proposed project would have a less than significant impact on the significance of a historical resource.				
XVIII. UTILITIES AND SERVICE SYSTEMS - Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
California statutes regarding the quality of wastewater are enforced by the State Water Resources Control Board (SWRCB) and the associated regional boards. The Orange County Sanitation District (OCSD) is responsible for collecting, treating, and disposing of wastewater generated in the project area (PEIR, The Fullerton Plan, 2012). The OCSD operates two wastewater treatment facilities, Reclamation Plant No. 1 and Treatment Plant No. 2. Wastewater attributed to the proposed project site would be collected at No. 2 that currently receives 127 million gallons (mgd) of effluent for its total capacity of 168 mgd (PEIR, The Fullerton Plan, 2012). The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The proposed project would take place entirely on Airport property and is not anticipated to exceed wastewater treatment requirements. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X

Refer to response to Section XVIII (a) above.				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
The proposed project would not result in the construction of new stormwater drainage facilities or expansion of existing facilities. The proposed project would not violate any water quality standards or waste discharge requirements. Therefore, the proposed project would have no impact.				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			X	
The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The proposed project would help to support activities associated with the existing terminal building. Current water supplies from existing entitlements and resources will be sufficient for the proposed project. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
Refer to response to Section XVIII (a) above.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			X	
The City of Fullerton is under contract with MG Disposal, a Republic Services Company for weekly commercial and industrial refuse collection. Orange County Waste and Recycling has a Construction and Demolition Program that requires compliance with the 65 percent diversion for applicable construction and demolition projects (ocgov.com). The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The proposed project would comply with federal, state, and local statutes and regulations for solid waste. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
g) Comply with federal, state, and local statutes and regulations related to solid waste?			X	
The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. The proposed project would help to support activities associated with the existing terminal building and solid waste produced by the proposed project would comply with federal, state, and local statutes and regulations. Therefore, the proposed project would have a less than significant impact with no mitigation required.				
XIX. MANDATORY FINDINGS OF SIGNIFICANCE.				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			X	
The proposed project would take place entirely on Airport property on previously disturbed paved areas. The proposed project consists of the construction of a new terminal building with associated parking in order to accommodate existing needs of the Airport. According to the U.S Fish and Wildlife Service's list of threatened and endangered species, there are no critical habitats found within the proposed project area. The proposed project is not anticipated to result in substantial soil erosion or loss of topsoil that would expose unidentified archaeological resources during construction. Therefore, the proposed project would have a less than significant impact with no mitigation required for any of the identified species due to the lack of viable habitat in or around the proposed project area as well as not eliminate important examples of the major periods of California history or prehistory.				

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?			X	
As outlined in this report, the proposed project would have an overall less than significant impact with no mitigation required. The proposed project is a standard Airport project that will take place entirely on Airport property. The proposed project consists of the construction of a new terminal building to accommodate existing operations and to extend the capacity of the existing terminal building. Therefore, the proposed project would have a less than significant impact with no mitigation required to its contribution to cumulative impacts.				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			X	
As outlined in this report, the analysis determined that the proposed project would have no impact or less than significant impacts with no mitigation required to the following environmental impact categories: aesthetics, agriculture & forest resources, air quality, biological resources, cultural resources, geology/soils, greenhouse gas emissions, hazards & hazardous materials, hydrology/water quality, land use/planning, mineral resources, noise, population/housing, public services, recreation, transportation/traffic, and utilities/service systems. Therefore, the proposed project would have a less than significant impact with no mitigation required on overall environmental effects and would not cause a substantial adverse effect on human beings, either directly or indirectly.				

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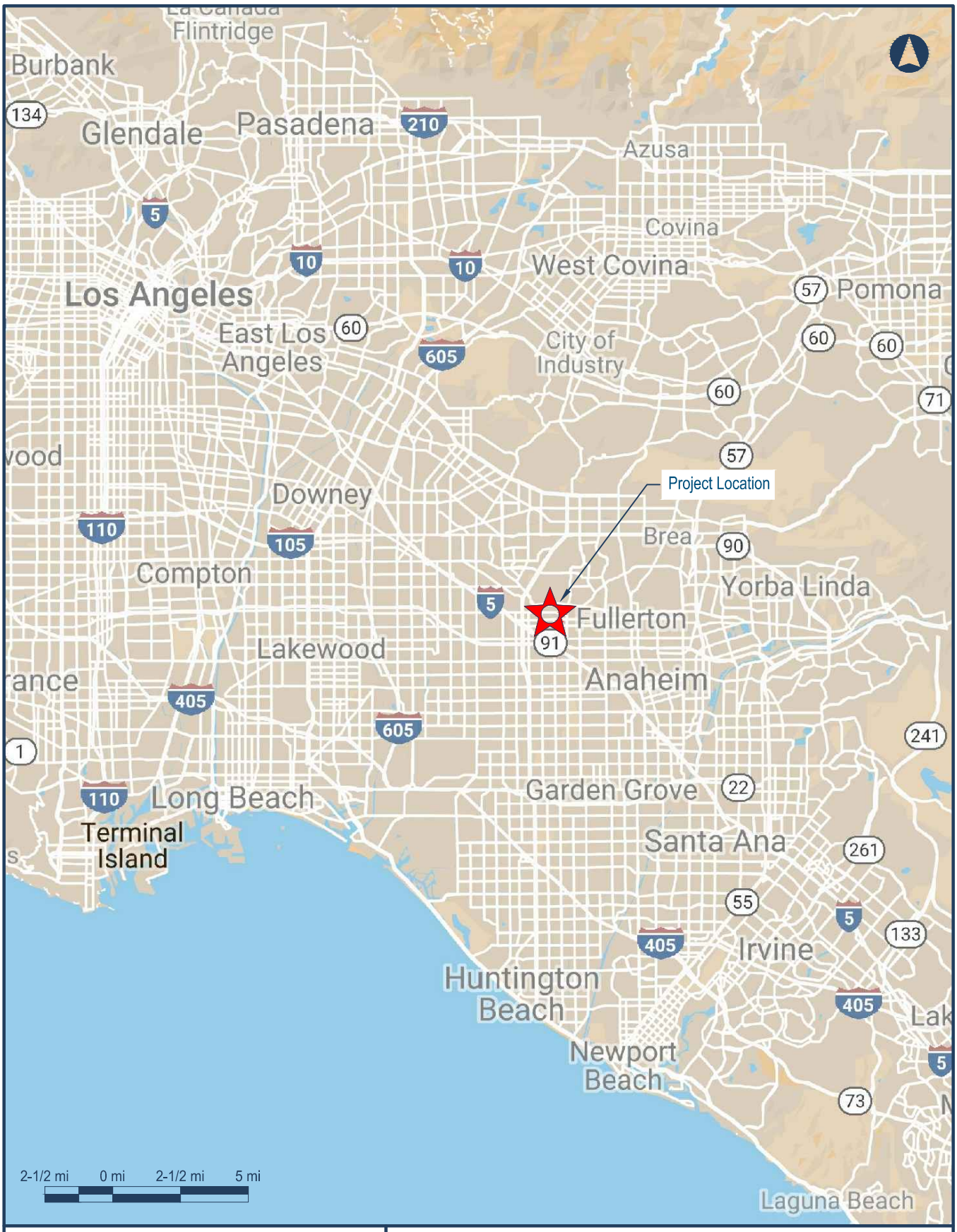
Figure 1

Regional Location



Project Location Map

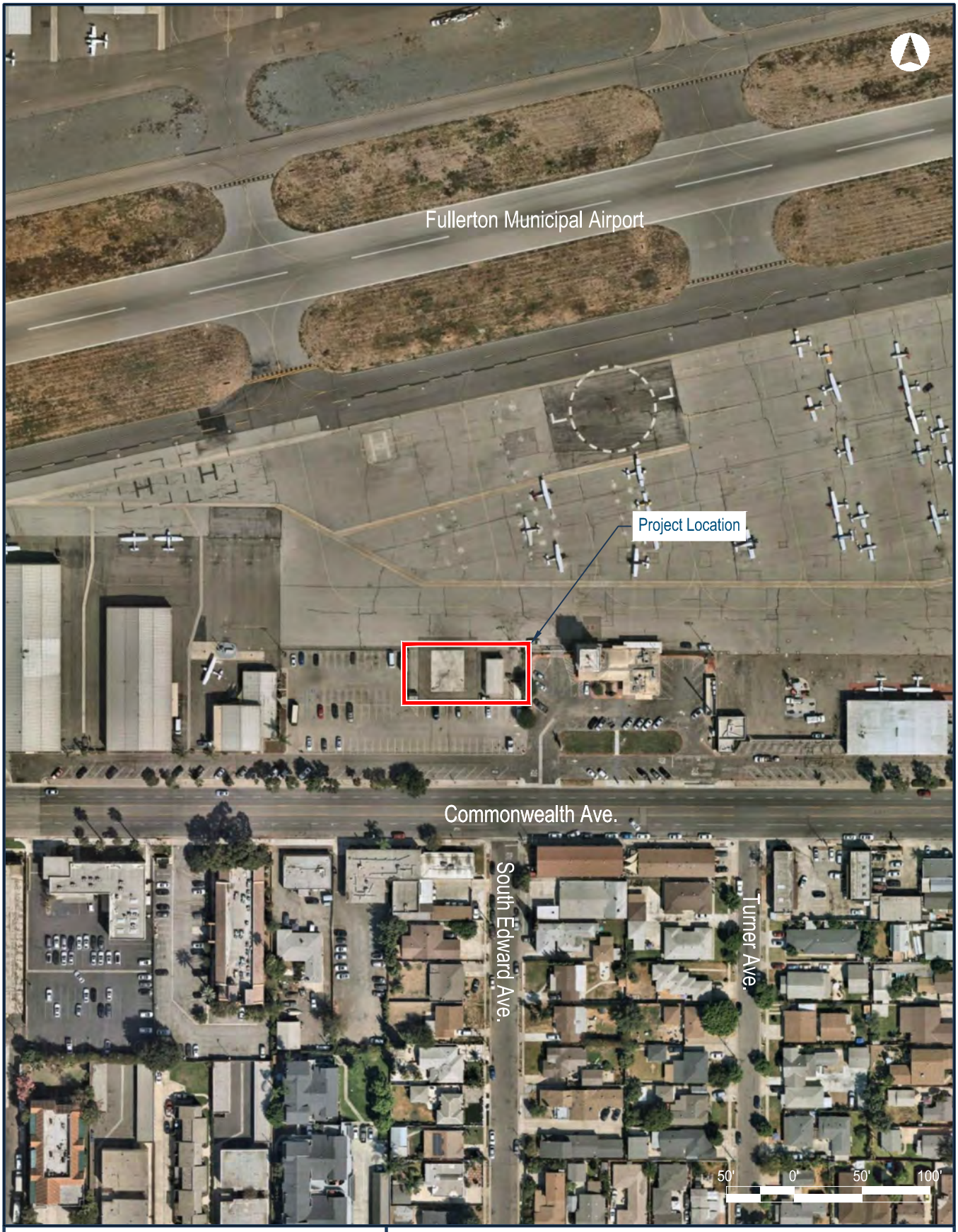
Fullerton Municipal Airport

C&S COMPANIES®

FIGURE 1

Figure 2

Project Location



Fullerton Municipal Airport

Project Vicinity Map

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FIGURE 2

Attachment A

California Native American Tribes
Letters of Notification

CITY OF FULLERTON

Public Works Department – Engineering Division

January 23, 2020

Andrew Salas, Chairman
Gabrieleño Band of Mission Indians – Kizh Nation
PO Box 393
Covina, CA 91723

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (d).

Dear Mr. Salas:

Pursuant to Public Resources Code § 21080.3.1 (b), a request for notification was submitted by the Gabrieleño Band of Mission Indians – Kizh Nation for projects that have the potential to result in a negative declaration, mitigated negative declaration, or an environmental impact report that are within the geographic area traditionally and culturally affiliated with this tribe. Therefore, the City of Fullerton is providing notification, pursuant to Public Resources Code § 21080.3.1 (d), of the following:

Proposed Project Description:

The proposed project consists of the construction of a new 7,950 square foot (SF) two-story terminal building with associated site and parking lot modifications. The purpose of the proposed project is to expand the capacity of the current terminal building to accommodate the existing needs of the Airport. The first floor of the proposed project will contain offices that will be utilized by existing staff. The second floor will hold three multipurpose rooms (1,600 SF) that would be available to rent for meetings and/or events. Additionally, the proposed project will involve relocating the existing driveway as well as installing additional parking spaces, remarking existing parking spaces, and modifying the sidewalks. Existing utilities will be extended to service the proposed project and will act as an extension of the existing terminal building.

Proposed Project Location:

Fullerton Municipal Airport
4011 West Commonwealth Avenue
Fullerton, CA 92833

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Lead Agency Point of Contact:

David Grantham, P.E., Senior Civil Engineer
City of Fullerton Public Works - Engineering
303 West Commonwealth Avenue
Fullerton, California 92832-1775

If you have any questions prior to submitting a written request, please contact David Grantham, Senior Civil Engineer at (714) 738-6853 or by email at DGrantham@cityoffullerton.com. If the City of Fullerton does not receive a request within 30-days of your receipt of this letter, the consultation period will be completed and you will receive written notification.

Sincerely,

David Grantham,
Senior Civil Engineer
City of Fullerton Public Works - Engineering

Attachment – Project Vicinity Map

Fullerton Municipal Airport

Project Vicinity Map

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FIGURE 2

CITY OF FULLERTON

Public Works Department – Engineering Division

January 23, 2020

Linda Candelaria, Tribal Councilwoman
Gabrielino-Tongva Tribe, San Gabriel Band of Mission Indians
1999 Avenue of the Stars, #1100
Los Angeles, CA 90067

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (d).

Dear Ms. Candelaria:

Pursuant to Public Resources Code § 21080.3.1 (b), a request for notification was submitted by the Gabrielino-Tongva Tribe, San Gabriel Band of Mission Indians for projects that have the potential to result in a negative declaration, mitigated negative declaration, or an environmental impact report that are within the geographic area traditionally and culturally affiliated with this tribe. Therefore, the City of Fullerton is providing notification, pursuant to Pursuant to Public Resources Code § 21080.3.1 (d), of the following:

Proposed Project Description:

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Sincerely,

David Grantham,
Senior Civil Engineer
City of Fullerton Public Works - Engineering

Attachment – Project Vicinity Map

Fullerton Municipal Airport

Project Vicinity Map

C&S COMPANIES®

FIGURE 2

CITY OF FULLERTON

Public Works Department – Engineering Division

January 23, 2020

Joyce Stanfield Perry, Tribal Manager
Juaneño Band of Mission Indians – Acjachemen Nation
4955 Paseo Segovia
Irvine, CA 92603

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (d).

Dear Ms. Stanfield Perry:

Pursuant to Public Resources Code § 21080.3.1 (b), a request for notification was submitted by the Juaneño Band of Mission Indians – Acjachemen Nation for projects that have the potential to result in a negative declaration, mitigated negative declaration, or an environmental impact report that are within the geographic area traditionally and culturally affiliated with this tribe. Therefore, the City of Fullerton is providing notification, pursuant to Pursuant to Public Resources Code § 21080.3.1 (d), of the following:

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Fullerton, CA 92833

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Sincerely,

David Grantham,
Senior Civil Engineer
City of Fullerton Public Works - Engineering

Attachment – Project Vicinity Map

Fullerton Municipal Airport

Project Vicinity Map

C&S COMPANIES®

FIGURE 2

CITY OF FULLERTON

Public Works Department – Engineering Division

January 23, 2020

Anthony Morales, Chief
San Gabriel Band of Mission Indians
P.O. Box 693
San Gabriel, CA 91778

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (d).

Dear Mr. Morales:

Pursuant to Public Resources Code § 21080.3.1 (b), a request for notification was submitted by the San Gabriel Band of Mission Indians for projects that have the potential to result in a negative declaration, mitigated negative declaration, or an environmental impact report that are within the geographic area traditionally and culturally affiliated with this tribe. Therefore, the City of Fullerton is providing notification, pursuant to Pursuant to Public Resources Code § 21080.3.1 (d), of the following:

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Sincerely,

David Grantham,
Senior Civil Engineer
City of Fullerton Public Works - Engineering

Attachment – Project Vicinity Map

Fullerton Municipal Airport

Project Vicinity Map

C&S COMPANIES®

FIGURE 2

CITY OF FULLERTON

Public Works Department – Engineering Division

January 23, 2020

Joseph Ontiveros, Cultural Resources Director
Soboba Band of Luiseño Indians
PO Box 487
San Jacinto, CA 92581

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1 (d).

Dear Mr. Ontiveros:

Pursuant to Public Resources Code § 21080.3.1 (b), a request for notification was submitted by the Soboba Band of Luiseño Indians for projects that have the potential to result in a negative declaration, mitigated negative declaration, or an environmental impact report that are within the geographic area traditionally and culturally affiliated with this tribe. Therefore, the City of Fullerton is providing notification, pursuant to Pursuant to Public Resources Code § 21080.3.1 (d), of the following:

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Sincerely,

David Grantham,
Senior Civil Engineer
City of Fullerton Public Works - Engineering

Attachment – Project Vicinity Map

Fullerton Municipal Airport

Project Vicinity Map

C&S COMPANIES®

FIGURE 2

Attachment B

Air Quality Analysis

C&S Companies
2355 Northside Drive, Suite 350
San Diego, CA 92108
p: (619) 296-9373
f: (619) 296-5683
www.cscos.com

Memo

TO: David Grantham, P.E.
Public Works-Engineering
City of Fullerton

FROM: Kara Young
Senior Consultant
C&S Companies, Inc.

DATE: December 19, 2019

RE: Terminal Building
Emissions Modeling (Construction and Operational)
Fullerton Airport

C&S FILE: N60.001.006

Introduction

This memo summarizes the construction and operational emissions associated with the proposed terminal expansion project at Fullerton airport. The project is a new 7,950 square foot (SF) building located at 4011 West Commonwealth Avenue. The first floor is expected to be an expansion of the existing terminal to accommodate existing staff and operations. The second floor is expected to include three multi-purpose rooms totaling 1,600 SF that would be available for rent for meetings and/or events. The proposed project also includes relocating the existing driveway and installation of new parking pavement and sidewalks.

There would be a temporary increase in emissions from use of heavy equipment and travel by contractors during construction. The proposed project would not increase aviation-related emissions (i.e., aircraft and APUs). However, an increase in operational emissions associated with mobile sources (employee and passenger travel to and from the Airport) and stationary sources (heating and cooling of any airport-owned buildings as well as the use of emergency generators) is expected. According to the Federal Aviation Administration's (FAA) *Aviation Emissions and Air Quality Handbook* (Version 3, Update 1, January 2015), if the proposed project will cause a reasonably foreseeable emission increase, an emissions inventory must be prepared. This document provides

the methodology and data used to prepare the air quality analysis for the additional aircraft operations at the Airport.

Criteria Pollutant Methodology and Results

The construction and operational sources of emissions included in the emission inventory are described in **Table 1**.

Table 1 – Sources of Emissions

Source	Primary Emissions	Characteristics	Potential Change
Construction	CO, NO_x, PM, SO_x, VOC	Dust generated during excavation and land clearing, exhaust emissions from construction equipment and motor vehicles and evaporative emissions from asphalt paving and painting.	Construction equipment on site required to complete the proposed development and vehicles needed to haul materials to and from the site
Motor Vehicles	CO, NOX, PM, VOC	Exhaust products of fuel combustion from motor vehicles approaching, departing and operating at the Airport. Emissions vary depending on vehicle type, distance traveled and operating speed.	Change in the number of vehicles traveling to and from the Airport

Source: C&S Engineers, Inc. 2019

Table 2 presents information relating to the models and data used for modeling inputs.

Table 2 – Air Quality Analysis, Operational Emission Data Sources, Methods and Models

Source	Model or Method	Supporting Data
Construction	CalEEMod	Anticipated construction schedule and overall project dimensions for individual components – City of Fullerton
Motor Vehicles	CalEEMod	Traffic volumes and fleet mix – CalEEMod data and traffic analysis

Source: C&S Engineers, Inc. 2019

As recommended within CalEEMod guidance, the two floors of the proposed building were modeled separately to account for the different uses. CalEEMod provides a variety of different building uses that have different default characteristics, such as population, number of employees or customers traveling to and from, as well as utility consumption rates. The model does not provide an exact match for “airport terminal building” and “multi-purpose, rentable room”; therefore, similar building use types were selected. The first floor was modeled as a “government office building” to reflect typical business hours. The second floor was modeled as “office park”; CalEEMod suggests using this land use type when details regarding individual buildings are not available.

The CalEEMod defaults for construction equipment fleet and hours of use were used; if applicable, additional information relating to the project components was provided. For example, demolition activities were added to account for the 48,000 SF of pavement demolition. An 18” depth of demolition and a material density of 2.1 cubic yards per ton of demolished pavement was used in order to quantify total tons of demolished material for entry in CalEEMod.

CalEEMod assumes that the first floor and second floors will generate 103.40 and 10.85 average weekday trips respectively; the model also assumes that the second floor will generate 1.64 trips on Saturdays and 0.76 trips on Sundays. The traffic analysis for this project assumes that no additional trips will occur as part of the first floor, but the second floor would generate 74 new trips during both the AM and PM peak hour. Correspondence with Mark Miller indicates that the peak volume represents 10% of total daily volumes; therefore, the proposed project could contribute 740 daily trips on an average day. It was assumed that trips only occur during the week. Therefore, the CalEEMod default trips per day for the first and second floors were changed to zero and 704, respectively, to provide consistency with the traffic analysis.

Table 3 presents the results of the aircraft emissions anticipated as a result of the proposed project. Detailed emissions results for these sources are provided in **Attachment 1** of this report.

Table 3 – Emissions Summary

Source	CO	VOC	NOx	SOx	PM2.5	PM10	CO2	CH4	N2O	CO2e
Annual Emissions (Short Tons)							*Annual Emissions (Metric Tons)*			
Construction (2021)	1.5872	0.2699	1.7410	0.0030	0.0976	0.1397	253.18	0.04	0.000	254.27
Operations (2022)	3.1121	0.2687	0.9951	0.0122	0.3100	1.1339	1,182.47	0.22	0.002	1,190.89
Summer Daily Emissions (Pounds per Day)										
Construction (2021)	15.3274	10.0865	21.3265	0.0302	3.6821	6.6550	2,990.35	0.65	0.000	3,006.65
Operations (2022)	24.6876	2.0409	7.2724	0.0966	2.4200	8.8746	9,828.85	0.39	0.001	9,838.73
Winter Daily Emissions (Pounds per Day)										
Construction (2021)	15.3188	10.0880	21.3483	0.0301	3.6821	6.6550	2,974.98	0.65	0.000	2,991.31
Operations (2022)	23.5525	2.0098	7.4787	0.0923	2.4203	8.8749	9,396.71	0.39	0.001	9,406.56

Source: C&S Engineers, Inc. 2019

Analysis of Results

The impact on air quality is assessed by comparing the total emissions against the National Ambient Air Quality Standards (NAAQS). NAAQS are set for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter (PM), ozone, and lead. The proposed project is located in Orange County. The specific attainment/nonattainment/maintenance status for each pollutant subject to a NAAQS are detailed in **Table 4**.

Table 4—NAAQS Designation Status of Orange County

Pollutant	Orange County
Eight-hour Ozone (2008 and 2015)	**Extreme nonattainment**
Fine Particle Matter ($PM_{2.5}$) (2006)	**Serious nonattainment**
Fine Particle Matter ($PM_{2.5}$) (1997 and 2012)	**Moderate nonattainment**
Coarse Particulate Matter (PM_{10}) (1987)	**Maintenance** (as of 7/26/2013)
Lead	Attainment
Carbon Monoxide (CO) (1971)	**Maintenance** (as of 6/11/2007)
Nitrogen Dioxide (NO_2)	**Maintenance** (as of 9/22/1998)
Sulfur Dioxide	Attainment

Source: USEPA Greenbook, November 30, 2019

Under the California Clean Air Act (CCAA), signed into law in 1988, areas have been designated as attainment or nonattainment with respect to the state standards. The South Coast Air Quality Management District (SCAQMD) is currently designated as non-attainment for the following state standards:

- One-hour ozone
- Eight-hour ozone
- PM_{10}
- $PM_{2.5}$

It should be noted that ozone is not directly emitted from a source but is formed through the reaction of oxides of nitrogen (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. Therefore, the applicability analysis for General Conformity only applies to CO, NO_2, PM_{10}, $PM_{2.5}$, NO_x and VOCs.

Table 5 compares the emissions increase to state and federal thresholds for all nonattainment and maintenance parameters. It should be noted that while federal thresholds are listed on an annual basis, state thresholds are reported in pounds per

day. CalEEMod provides results in tons per year and pounds per day for summer and winter months.

Table 5 – Criteria Pollutant Emissions Summary

Source	CO	VOC	NOx	SOx	PM2.5	PM10
Federal Thresholds (tons/year)	***100***	***10***	***10***	***N/A***	***100***	***100***
2020 Emissions (tons per year)	1.5872	0.2699	1.7410	0.0030	0.0976	0.1397
2021 Emissions (tons per year)	3.1121	0.2687	0.9951	0.0122	0.3100	1.1339
***State Thresholds (Construction)* (lbs/day)**	***550***	***75***	***100***	***150***	***55***	***150***
Summer Construction Emissions (lbs/day)	15.3274	10.0865	21.3265	0.0302	3.6821	6.6550
Winter Construction Emissions (lbs/day)	15.3188	10.0880	21.3483	0.0301	3.6821	6.6550
State Thresholds (Operational) (lbs/day)	***550***	***55***	***55***	***150***	***55***	***150***
Summer Operational Emissions (lbs/day)	24.6876	2.0409	7.2724	0.0966	2.4200	8.8746
Winter Operational Emissions (lbs/day)	23.5525	2.0098	7.4787	0.0923	2.4203	8.8749

Federal Thresholds Source: 40 CFR 93.153(b)(1) & (2)

State Thresholds Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, April 2019. Accessed on December 18, 2019. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf

The increase in total emissions is below applicable *de minimis* thresholds and state thresholds for nonattainment and maintenance parameters, therefore, the proposed project would be presumed to conform to the state implementation plan.

GHG emissions associated with the proposed project were also calculated for carbon dioxide, methane, and nitrous oxide. The resulting carbon dioxide equivalent emissions during operation is approximately 1,191 metric tons. There are currently no federal or state requirements for reporting GHGs from aviation sources and no significance thresholds. The South Coast AQMD CEQA handbook published a threshold of 10,000 MT/year of CO_2e for industrial facilities. The emissions resulting from the proposed project will be under this threshold.

Attachment 1

Model Results

FUL_Terminal_121619

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	7.95	1000sqft	0.18	7,950.00	0
Office Park	1.66	1000sqft	0.04	1,660.00	0
Other Asphalt Surfaces	12.60	1000sqft	0.29	12,600.00	0
Other Non-Asphalt Surfaces	6.00	1000sqft	0.14	6,000.00	0
Parking Lot	15.50	1000sqft	0.36	15,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Demolition - Demolition includes 48,000 SF of asphalt paved and landscaped area. Assumed depth of demolition is 1.5 FT. Tons of debris assumes 2.1 CY of debris = 1 ton.

Grading -

Stationary Sources - Emergency Generators and Fire Pumps - Generator properties taken from defaults within AEDT (HP of 158; load factor of 0.82). Assumed use of once per year for 12 hours.

Stationary Sources - Process Boilers -

Vehicle Trips - The traffic analysis for the proposed project indicates that zero trips will be generated from the first floor (existing operations in the terminal building will not increase). The analysis also indicates that the second floor could introduce 740 daily trips during the week. It is assumed that no trips will be generated during the weekend.

Table Name	Column Name	Default Value	New Value
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	158.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	12.00
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.82
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.64	0.00
tblVehicleTrips	SU_TR	0.76	0.00
tblVehicleTrips	WD_TR	68.93	0.00
tblVehicleTrips	WD_TR	11.42	740.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2699	1.7410	1.5872	2.9900e-003	0.0559	0.0838	0.1397	0.0173	0.0804	0.0976	0.0000	253.1832	253.1832	0.0433	0.0000	254.2655
Maximum	**0.2699**	**1.7410**	**1.5872**	**2.9900e-003**	**0.0559**	**0.0838**	**0.1397**	**0.0173**	**0.0804**	**0.0976**	**0.0000**	**253.1832**	**253.1832**	**0.0433**	**0.0000**	**254.2655**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2699	1.7410	1.5872	2.9900e-003	0.0559	0.0838	0.1397	0.0173	0.0804	0.0976	0.0000	253.1830	253.1830	0.0433	0.0000	254.2653
Maximum	**0.2699**	**1.7410**	**1.5872**	**2.9900e-003**	**0.0559**	**0.0838**	**0.1397**	**0.0173**	**0.0804**	**0.0976**	**0.0000**	**253.1830**	**253.1830**	**0.0433**	**0.0000**	**254.2653**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-4-2021	4-3-2021	0.5915	0.5915
2	4-4-2021	7-3-2021	0.5272	0.5272
3	7-4-2021	9-30-2021	0.5156	0.5156
		Highest	0.5915	0.5915

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0419	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003
Energy	4.9000e-004	4.4900e-003	3.7700e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	51.3547	51.3547	1.9600e-003	4.8000e-004	51.5458
Mobile	0.2245	0.9857	3.1014	0.0121	1.1244	8.9200e-003	1.1333	0.3011	8.2900e-003	0.3094	0.0000	1,118.1566	1,118.1566	0.0455	0.0000	1,119.2944
Stationary	1.7500e-003	4.8800e-003	6.3400e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	0.8110	0.8110	1.1000e-004	0.0000	0.8139
Waste						0.0000	0.0000		0.0000	0.0000	1.8127	0.0000	1.8127	0.1071	0.0000	4.4909
Water						0.0000	0.0000		0.0000	0.0000	0.5947	12.1474	12.7420	0.0616	1.5400e-003	14.7411
Total	**0.2687**	**0.9951**	**3.1121**	**0.0122**	**1.1244**	**9.5200e-003**	**1.1339**	**0.3011**	**8.8900e-003**	**0.3100**	**2.4074**	**1,182.4707**	**1,184.8781**	**0.2163**	**2.0200e-003**	**1,190.8872**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0419	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003
Energy	4.9000e-004	4.4900e-003	3.7700e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	51.3547	51.3547	1.9600e-003	4.8000e-004	51.5458
Mobile	0.2245	0.9857	3.1014	0.0121	1.1244	8.9200e-003	1.1333	0.3011	8.2900e-003	0.3094	0.0000	1,118.1566	1,118.1566	0.0455	0.0000	1,119.2944
Stationary	1.7500e-003	4.8800e-003	6.3400e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	0.8110	0.8110	1.1000e-004	0.0000	0.8139
Waste						0.0000	0.0000		0.0000	0.0000	1.8127	0.0000	1.8127	0.1071	0.0000	4.4909
Water						0.0000	0.0000		0.0000	0.0000	0.5947	12.1474	12.7420	0.0616	1.5400e-003	14.7411
Total	**0.2687**	**0.9951**	**3.1121**	**0.0122**	**1.1244**	**9.5200e-003**	**1.1339**	**0.3011**	**8.8900e-003**	**0.3100**	**2.4074**	**1,182.4707**	**1,184.8781**	**0.2163**	**2.0200e-003**	**1,190.8872**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

FUL_Terminal_121619 - Orange County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/4/2021	1/29/2021	5	20	
2	Site Preparation	Site Preparation	1/30/2021	2/2/2021	5	2	
3	Grading	Grading	2/3/2021	2/8/2021	5	4	
4	Building Construction	Building Construction	2/9/2021	11/15/2021	5	200	
5	Paving	Paving	11/16/2021	11/29/2021	5	10	
6	Architectural Coating	Architectural Coating	11/30/2021	12/13/2021	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 14,415; Non-Residential Outdoor: 4,805; Striped Parking Area: 2,046 (Architectural Coating – sqft)

OffRoad Equipment

FUL_Terminal_121619 - Orange County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	126.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	17.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0136	0.0000	0.0136	2.0600e-003	0.0000	2.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0199	0.1970	0.1449	2.4000e-004		0.0104	0.0104		9.7100e-003	9.7100e-003	0.0000	21.0713	21.0713	5.3900e-003	0.0000	21.2060
Total	**0.0199**	**0.1970**	**0.1449**	**2.4000e-004**	**0.0136**	**0.0104**	**0.0240**	**2.0600e-003**	**9.7100e-003**	**0.0118**	**0.0000**	**21.0713**	**21.0713**	**5.3900e-003**	**0.0000**	**21.2060**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	0.0165	4.5000e-003	5.0000e-005	1.0800e-003	5.0000e-005	1.1300e-003	3.0000e-004	5.0000e-005	3.4000e-004	0.0000	4.7851	4.7851	5.0000e-004	0.0000	4.7977
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.2000e-004	3.7300e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1924	1.1924	3.0000e-005	0.0000	1.1930
Total	**9.4000e-004**	**0.0168**	**8.2300e-003**	**6.0000e-005**	**2.5100e-003**	**6.0000e-005**	**2.5700e-003**	**6.8000e-004**	**6.0000e-005**	**7.3000e-004**	**0.0000**	**5.9775**	**5.9775**	**5.3000e-004**	**0.0000**	**5.9907**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0136	0.0000	0.0136	2.0600e-003	0.0000	2.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0199	0.1970	0.1449	2.4000e-004		0.0104	0.0104		9.7100e-003	9.7100e-003	0.0000	21.0713	21.0713	5.3900e-003	0.0000	21.2060
Total	**0.0199**	**0.1970**	**0.1449**	**2.4000e-004**	**0.0136**	**0.0104**	**0.0240**	**2.0600e-003**	**9.7100e-003**	**0.0118**	**0.0000**	**21.0713**	**21.0713**	**5.3900e-003**	**0.0000**	**21.2060**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	0.0165	4.5000e-003	5.0000e-005	1.0800e-003	5.0000e-005	1.1300e-003	3.0000e-004	5.0000e-005	3.4000e-004	0.0000	4.7851	4.7851	5.0000e-004	0.0000	4.7977
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.2000e-004	3.7300e-003	1.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1924	1.1924	3.0000e-005	0.0000	1.1930
Total	**9.4000e-004**	**0.0168**	**8.2300e-003**	**6.0000e-005**	**2.5100e-003**	**6.0000e-005**	**2.5700e-003**	**6.8000e-004**	**6.0000e-005**	**7.3000e-004**	**0.0000**	**5.9775**	**5.9775**	**5.3000e-004**	**0.0000**	**5.9907**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**5.8000e-003**	**7.7000e-004**	**6.5700e-003**	**2.9500e-003**	**7.0000e-004**	**3.6500e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0734	0.0734	0.0000	0.0000	0.0734
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0734**	**0.0734**	**0.0000**	**0.0000**	**0.0734**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-003	0.0000	5.8000e-003	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.5600e-003	0.0174	7.5600e-003	2.0000e-005		7.7000e-004	7.7000e-004		7.0000e-004	7.0000e-004	0.0000	1.5118	1.5118	4.9000e-004	0.0000	1.5241
Total	**1.5600e-003**	**0.0174**	**7.5600e-003**	**2.0000e-005**	**5.8000e-003**	**7.7000e-004**	**6.5700e-003**	**2.9500e-003**	**7.0000e-004**	**3.6500e-003**	**0.0000**	**1.5118**	**1.5118**	**4.9000e-004**	**0.0000**	**1.5241**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	9.0000e-005	0.0000	9.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0734	0.0734	0.0000	0.0000	0.0734
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0734**	**0.0734**	**0.0000**	**0.0000**	**0.0734**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5800e-003	0.0287	0.0127	3.0000e-005		1.2800e-003	1.2800e-003		1.1700e-003	1.1700e-003	0.0000	2.4767	2.4767	8.0000e-004	0.0000	2.4968
Total	**2.5800e-003**	**0.0287**	**0.0127**	**3.0000e-005**	**9.8300e-003**	**1.2800e-003**	**0.0111**	**5.0500e-003**	**1.1700e-003**	**6.2200e-003**	**0.0000**	**2.4767**	**2.4767**	**8.0000e-004**	**0.0000**	**2.4968**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1468	0.1468	0.0000	0.0000	0.1468
Total	**6.0000e-005**	**4.0000e-005**	**4.6000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1468**	**0.1468**	**0.0000**	**0.0000**	**0.1468**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.5800e-003	0.0287	0.0127	3.0000e-005		1.2800e-003	1.2800e-003		1.1700e-003	1.1700e-003	0.0000	2.4767	2.4767	8.0000e-004	0.0000	2.4968
Total	**2.5800e-003**	**0.0287**	**0.0127**	**3.0000e-005**	**9.8300e-003**	**1.2800e-003**	**0.0111**	**5.0500e-003**	**1.1700e-003**	**6.2200e-003**	**0.0000**	**2.4767**	**2.4767**	**8.0000e-004**	**0.0000**	**2.4968**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.0000e-005	4.0000e-005	4.6000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1468	0.1468	0.0000	0.0000	0.1468
Total	**6.0000e-005**	**4.0000e-005**	**4.6000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1468**	**0.1468**	**0.0000**	**0.0000**	**0.1468**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1813	1.3636	1.2899	2.2000e-003		0.0684	0.0684		0.0661	0.0661	0.0000	181.5476	181.5476	0.0324	0.0000	182.3579
Total	**0.1813**	**1.3636**	**1.2899**	**2.2000e-003**		**0.0684**	**0.0684**		**0.0661**	**0.0661**	**0.0000**	**181.5476**	**181.5476**	**0.0324**	**0.0000**	**182.3579**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9100e-003	0.0667	0.0187	1.7000e-004	4.4100e-003	1.4000e-004	4.5500e-003	1.2700e-003	1.3000e-004	1.4000e-003	0.0000	16.8930	16.8930	1.3700e-003	0.0000	16.9272
Worker	6.2300e-003	4.1900e-003	0.0488	1.7000e-004	0.0187	1.2000e-004	0.0188	4.9600e-003	1.1000e-004	5.0700e-003	0.0000	15.5922	15.5922	3.3000e-004	0.0000	15.6006
Total	**8.1400e-003**	**0.0709**	**0.0675**	**3.4000e-004**	**0.0231**	**2.6000e-004**	**0.0233**	**6.2300e-003**	**2.4000e-004**	**6.4700e-003**	**0.0000**	**32.4852**	**32.4852**	**1.7000e-003**	**0.0000**	**32.5278**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1813	1.3636	1.2899	2.2000e-003		0.0684	0.0684		0.0661	0.0661	0.0000	181.5474	181.5474	0.0324	0.0000	182.3577
Total	**0.1813**	**1.3636**	**1.2899**	**2.2000e-003**		**0.0684**	**0.0684**		**0.0661**	**0.0661**	**0.0000**	**181.5474**	**181.5474**	**0.0324**	**0.0000**	**182.3577**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.9100e-003	0.0667	0.0187	1.7000e-004	4.4100e-003	1.4000e-004	4.5500e-003	1.2700e-003	1.3000e-004	1.4000e-003	0.0000	16.8930	16.8930	1.3700e-003	0.0000	16.9272
Worker	6.2300e-003	4.1900e-003	0.0488	1.7000e-004	0.0187	1.2000e-004	0.0188	4.9600e-003	1.1000e-004	5.0700e-003	0.0000	15.5922	15.5922	3.3000e-004	0.0000	15.6006
Total	**8.1400e-003**	**0.0709**	**0.0675**	**3.4000e-004**	**0.0231**	**2.6000e-004**	**0.0233**	**6.2300e-003**	**2.4000e-004**	**6.4700e-003**	**0.0000**	**32.4852**	**32.4852**	**1.7000e-003**	**0.0000**	**32.5278**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0387	0.0443	7.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	8.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7200e-003**	**0.0387**	**0.0443**	**7.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.6000e-004	1.8700e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5962	0.5962	1.0000e-005	0.0000	0.5965
Total	**2.4000e-004**	**1.6000e-004**	**1.8700e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5962**	**0.5962**	**1.0000e-005**	**0.0000**	**0.5965**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0387	0.0443	7.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	8.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7200e-003**	**0.0387**	**0.0443**	**7.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	1.6000e-004	1.8700e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5962	0.5962	1.0000e-005	0.0000	0.5965
Total	**2.4000e-004**	**1.6000e-004**	**1.8700e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5962**	**0.5962**	**1.0000e-005**	**0.0000**	**0.5965**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0493					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.0504**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.3000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1376	0.1376	0.0000	0.0000	0.1377
Total	**5.0000e-005**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1376**	**0.1376**	**0.0000**	**0.0000**	**0.1377**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0493					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.0504**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.3000e-004	0.0000	1.6000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1376	0.1376	0.0000	0.0000	0.1377
Total	**5.0000e-005**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.7000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1376**	**0.1376**	**0.0000**	**0.0000**	**0.1377**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2245	0.9857	3.1014	0.0121	1.1244	8.9200e-003	1.1333	0.3011	8.2900e-003	0.3094	0.0000	1,118.1566	1,118.1566	0.0455	0.0000	1,119.2944
Unmitigated	0.2245	0.9857	3.1014	0.0121	1.1244	8.9200e-003	1.1333	0.3011	8.2900e-003	0.3094	0.0000	1,118.1566	1,118.1566	0.0455	0.0000	1,119.2944

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	0.00	0.00	0.00		
Office Park	1,228.40	0.00	0.00	2,964,525	2,964,525
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	1,228.40	0.00	0.00	2,964,525	2,964,525

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Office Park	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Office Park	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Non-Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Parking Lot	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	46.4699	46.4699	1.8700e-003	3.9000e-004	46.6320
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	46.4699	46.4699	1.8700e-003	3.9000e-004	46.6320
NaturalGas Mitigated	4.9000e-004	4.4900e-003	3.7700e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8848	4.8848	9.0000e-005	9.0000e-005	4.9138
NaturalGas Unmitigated	4.9000e-004	4.4900e-003	3.7700e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8848	4.8848	9.0000e-005	9.0000e-005	4.9138

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government Office Building	72663	3.9000e-004	3.5600e-003	2.9900e-003	2.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	3.8776	3.8776	7.0000e-005	7.0000e-005	3.9006
Office Park	18874.2	1.0000e-004	9.3000e-004	7.8000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0072	1.0072	2.0000e-005	2.0000e-005	1.0132
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.9000e-004**	**4.4900e-003**	**3.7700e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8848**	**4.8848**	**9.0000e-005**	**9.0000e-005**	**4.9138**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Government Office Building	72663	3.9000e-004	3.5600e-003	2.9900e-003	2.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	3.8776	3.8776	7.0000e-005	7.0000e-005	3.9006
Office Park	18874.2	1.0000e-004	9.3000e-004	7.8000e-004	1.0000e-005		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	1.0072	1.0072	2.0000e-005	2.0000e-005	1.0132
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**4.9000e-004**	**4.4900e-003**	**3.7700e-003**	**3.0000e-005**		**3.4000e-004**	**3.4000e-004**		**3.4000e-004**	**3.4000e-004**	**0.0000**	**4.8848**	**4.8848**	**9.0000e-005**	**9.0000e-005**	**4.9138**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	111221	36.3478	1.4600e-003	3.0000e-004	36.4746
Office Park	25547.4	8.3491	3.4000e-004	7.0000e-005	8.3782
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	5425	1.7729	7.0000e-005	1.0000e-005	1.7791
Total		**46.4699**	**1.8700e-003**	**3.8000e-004**	**46.6320**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Government Office Building	111221	36.3478	1.4600e-003	3.0000e-004	36.4746
Office Park	25547.4	8.3491	3.4000e-004	7.0000e-005	8.3782
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	5425	1.7729	7.0000e-005	1.0000e-005	1.7791
Total		**46.4699**	**1.8700e-003**	**3.8000e-004**	**46.6320**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0419	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003
Unmitigated	0.0419	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.9300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0369					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003
Total	**0.0419**	**1.0000e-005**	**5.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0800e-003**	**1.0800e-003**	**0.0000**	**0.0000**	**1.1600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	4.9300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0369					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	1.0000e-005	5.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.0800e-003	1.0800e-003	0.0000	0.0000	1.1600e-003
Total	**0.0419**	**1.0000e-005**	**5.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.0800e-003**	**1.0800e-003**	**0.0000**	**0.0000**	**1.1600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	12.7420	0.0616	1.5400e-003	14.7411
Unmitigated	12.7420	0.0616	1.5400e-003	14.7411

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	1.57934 / 0.967985	10.7364	0.0519	1.3000e-003	12.4208
Office Park	0.295038 / 0.18083	2.0057	9.6900e-003	2.4000e-004	2.3203
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**12.7420**	**0.0616**	**1.5400e-003**	**14.7411**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Government Office Building	1.57934 / 0.967985	10.7364	0.0519	1.3000e-003	12.4208
Office Park	0.295038 / 0.18083	2.0057	9.6900e-003	2.4000e-004	2.3203
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**12.7420**	**0.0616**	**1.5400e-003**	**14.7411**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.8127	0.1071	0.0000	4.4909
Unmitigated	1.8127	0.1071	0.0000	4.4909

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	7.39	1.5001	0.0887	0.0000	3.7164
Office Park	1.54	0.3126	0.0185	0.0000	0.7745
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**1.8127**	**0.1071**	**0.0000**	**4.4909**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Government Office Building	7.39	1.5001	0.0887	0.0000	3.7164
Office Park	1.54	0.3126	0.0185	0.0000	0.7745
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**1.8127**	**0.1071**	**0.0000**	**4.4909**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	12	158	0.82	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (100 - 175 HP)	1.7500e-003	4.8800e-003	6.3400e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	0.8110	0.8110	1.1000e-004	0.0000	0.8139
Total	**1.7500e-003**	**4.8800e-003**	**6.3400e-003**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**0.8110**	**0.8110**	**1.1000e-004**	**0.0000**	**0.8139**

11.0 Vegetation

FUL_Terminal_121619

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	7.95	1000sqft	0.18	7,950.00	0
Office Park	1.66	1000sqft	0.04	1,660.00	0
Other Asphalt Surfaces	12.60	1000sqft	0.29	12,600.00	0
Other Non-Asphalt Surfaces	6.00	1000sqft	0.14	6,000.00	0
Parking Lot	15.50	1000sqft	0.36	15,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Demolition - Demolition includes 48,000 SF of asphalt paved and landscaped area. Assumed depth of demolition is 1.5 FT. Tons of debris assumes 2.1 CY of debris = 1 ton.

Grading -

Stationary Sources - Emergency Generators and Fire Pumps - Generator properties taken from defaults within AEDT (HP of 158; load factor of 0.82). Assumed use of once per year for 12 hours.

Stationary Sources - Process Boilers -

Vehicle Trips - The traffic analysis for the proposed project indicates that zero trips will be generated from the first floor (existing operations in the terminal building will not increase). The analysis also indicates that the second floor could introduce 740 daily trips during the week. It is assumed that no trips will be generated during the weekend.

Table Name	Column Name	Default Value	New Value
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	158.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	12.00
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.82
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.64	0.00
tblVehicleTrips	SU_TR	0.76	0.00
tblVehicleTrips	WD_TR	68.93	0.00
tblVehicleTrips	WD_TR	11.42	740.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.0865	21.3265	15.3274	0.0302	5.8890	1.0469	6.6550	2.9774	0.9772	3.6821	0.0000	2,990.3515	2,990.3515	0.6519	0.0000	3,006.6494
Maximum	**10.0865**	**21.3265**	**15.3274**	**0.0302**	**5.8890**	**1.0469**	**6.6550**	**2.9774**	**0.9772**	**3.6821**	**0.0000**	**2,990.3515**	**2,990.3515**	**0.6519**	**0.0000**	**3,006.6494**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.0865	21.3265	15.3274	0.0302	5.8890	1.0469	6.6550	2.9774	0.9772	3.6821	0.0000	2,990.3515	2,990.3515	0.6519	0.0000	3,006.6494
Maximum	**10.0865**	**21.3265**	**15.3274**	**0.0302**	**5.8890**	**1.0469**	**6.6550**	**2.9774**	**0.9772**	**3.6821**	**0.0000**	**2,990.3515**	**2,990.3515**	**0.6519**	**0.0000**	**3,006.6494**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Energy	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
Mobile	1.8085	7.2478	24.6625	0.0965	8.8041	0.0686	8.8727	2.3543	0.0638	2.4181		9,799.3326	9,799.3326	0.3884		9,809.0429
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.0409**	**7.2724**	**24.6876**	**0.0966**	**8.8041**	**0.0705**	**8.8746**	**2.3543**	**0.0657**	**2.4200**		**9,828.8465**	**9,828.8465**	**0.3890**	**5.4000e-004**	**9,838.7328**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Energy	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
Mobile	1.8085	7.2478	24.6625	0.0965	8.8041	0.0686	8.8727	2.3543	0.0638	2.4181		9,799.3326	9,799.3326	0.3884		9,809.0429
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.0409**	**7.2724**	**24.6876**	**0.0966**	**8.8041**	**0.0705**	**8.8746**	**2.3543**	**0.0657**	**2.4200**		**9,828.8465**	**9,828.8465**	**0.3890**	**5.4000e-004**	**9,838.7328**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/4/2021	1/29/2021	5	20	
2	Site Preparation	Site Preparation	1/30/2021	2/2/2021	5	2	
3	Grading	Grading	2/3/2021	2/8/2021	5	4	
4	Building Construction	Building Construction	2/9/2021	11/15/2021	5	200	
5	Paving	Paving	11/16/2021	11/29/2021	5	10	
6	Architectural Coating	Architectural Coating	11/30/2021	12/13/2021	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 14,415; Non-Residential Outdoor: 4,805; Striped Parking Area: 2,046 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	126.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	17.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3586	0.0000	1.3586	0.2057	0.0000	0.2057			0.0000			0.0000
Off-Road	1.9930	19.6966	14.4925	0.0241		1.0409	1.0409		0.9715	0.9715		2,322.7171	2,322.7171	0.5940		2,337.5658
Total	**1.9930**	**19.6966**	**14.4925**	**0.0241**	**1.3586**	**1.0409**	**2.3995**	**0.2057**	**0.9715**	**1.1772**		**2,322.7171**	**2,322.7171**	**0.5940**		**2,337.5658**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0454	1.6016	0.4400	4.7500e-003	0.1097	5.0300e-003	0.1147	0.0300	4.8100e-003	0.0348		530.8492	530.8492	0.0550		532.2252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0284	0.3949	1.3700e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		136.7852	136.7852	2.9300e-003		136.8585
Total	**0.0923**	**1.6299**	**0.8348**	**6.1200e-003**	**0.2550**	**5.9700e-003**	**0.2610**	**0.0686**	**5.6800e-003**	**0.0742**		**667.6345**	**667.6345**	**0.0580**		**669.0836**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3586	0.0000	1.3586	0.2057	0.0000	0.2057			0.0000			0.0000
Off-Road	1.9930	19.6966	14.4925	0.0241		1.0409	1.0409		0.9715	0.9715	0.0000	2,322.7171	2,322.7171	0.5940		2,337.5658
Total	**1.9930**	**19.6966**	**14.4925**	**0.0241**	**1.3586**	**1.0409**	**2.3995**	**0.2057**	**0.9715**	**1.1772**	**0.0000**	**2,322.7171**	**2,322.7171**	**0.5940**		**2,337.5658**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0454	1.6016	0.4400	4.7500e-003	0.1097	5.0300e-003	0.1147	0.0300	4.8100e-003	0.0348		530.8492	530.8492	0.0550		532.2252
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0284	0.3949	1.3700e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		136.7852	136.7852	2.9300e-003		136.8585
Total	**0.0923**	**1.6299**	**0.8348**	**6.1200e-003**	**0.2550**	**5.9700e-003**	**0.2610**	**0.0686**	**5.6800e-003**	**0.0742**		**667.6345**	**667.6345**	**0.0580**		**669.0836**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041		1,666.5174	1,666.5174	0.5390		1,679.9920
Total	**1.5558**	**17.4203**	**7.5605**	**0.0172**	**5.7996**	**0.7654**	**6.5650**	**2.9537**	**0.7041**	**3.6578**		**1,666.5174**	**1,666.5174**	**0.5390**		**1,679.9920**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920
Total	**1.5558**	**17.4203**	**7.5605**	**0.0172**	**5.7996**	**0.7654**	**6.5650**	**2.9537**	**0.7041**	**3.6578**	**0.0000**	**1,666.5174**	**1,666.5174**	**0.5390**		**1,679.9920**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9143	0.0000	4.9143	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869		1,365.0648	1,365.0648	0.4415		1,376.1020
Total	**1.2884**	**14.3307**	**6.3314**	**0.0141**	**4.9143**	**0.6379**	**5.5522**	**2.5256**	**0.5869**	**3.1125**		**1,365.0648**	**1,365.0648**	**0.4415**		**1,376.1020**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9143	0.0000	4.9143	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020
Total	**1.2884**	**14.3307**	**6.3314**	**0.0141**	**4.9143**	**0.6379**	**5.5522**	**2.5256**	**0.5869**	**3.1125**	**0.0000**	**1,365.0648**	**1,365.0648**	**0.4415**		**1,376.1020**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0289	0.0175	0.2430	8.4000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		84.1755	84.1755	1.8000e-003		84.2206
Total	**0.0289**	**0.0175**	**0.2430**	**8.4000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**84.1755**	**84.1755**	**1.8000e-003**		**84.2206**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0187	0.6567	0.1781	1.7300e-003	0.0447	1.3600e-003	0.0461	0.0129	1.3000e-003	0.0142		188.1548	188.1548	0.0148		188.5236
Worker	0.0614	0.0371	0.5163	1.7900e-003	0.1900	1.2300e-003	0.1913	0.0504	1.1300e-003	0.0515		178.8730	178.8730	3.8300e-003		178.9688
Total	**0.0800**	**0.6938**	**0.6944**	**3.5200e-003**	**0.2347**	**2.5900e-003**	**0.2373**	**0.0633**	**2.4300e-003**	**0.0657**		**367.0278**	**367.0278**	**0.0186**		**367.4924**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0187	0.6567	0.1781	1.7300e-003	0.0447	1.3600e-003	0.0461	0.0129	1.3000e-003	0.0142		188.1548	188.1548	0.0148		188.5236
Worker	0.0614	0.0371	0.5163	1.7900e-003	0.1900	1.2300e-003	0.1913	0.0504	1.1300e-003	0.0515		178.8730	178.8730	3.8300e-003		178.9688
Total	**0.0800**	**0.6938**	**0.6944**	**3.5200e-003**	**0.2347**	**2.5900e-003**	**0.2373**	**0.0633**	**2.4300e-003**	**0.0657**		**367.0278**	**367.0278**	**0.0186**		**367.4924**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830		1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9442**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**		**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0284	0.3949	1.3700e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		136.7852	136.7852	2.9300e-003		136.8585
Total	**0.0469**	**0.0284**	**0.3949**	**1.3700e-003**	**0.1453**	**9.4000e-004**	**0.1463**	**0.0385**	**8.7000e-004**	**0.0394**		**136.7852**	**136.7852**	**2.9300e-003**		**136.8585**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830	0.0000	1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9442**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**	**0.0000**	**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0469	0.0284	0.3949	1.3700e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		136.7852	136.7852	2.9300e-003		136.8585
Total	**0.0469**	**0.0284**	**0.3949**	**1.3700e-003**	**0.1453**	**9.4000e-004**	**0.1463**	**0.0385**	**8.7000e-004**	**0.0394**		**136.7852**	**136.7852**	**2.9300e-003**		**136.8585**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.8568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**10.0757**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0108	6.5500e-003	0.0911	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		31.5658	31.5658	6.8000e-004		31.5827
Total	**0.0108**	**6.5500e-003**	**0.0911**	**3.2000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**31.5658**	**31.5658**	**6.8000e-004**		**31.5827**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.8568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**10.0757**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0108	6.5500e-003	0.0911	3.2000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		31.5658	31.5658	6.8000e-004		31.5827
Total	**0.0108**	**6.5500e-003**	**0.0911**	**3.2000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**31.5658**	**31.5658**	**6.8000e-004**		**31.5827**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.8085	7.2478	24.6625	0.0965	8.8041	0.0686	8.8727	2.3543	0.0638	2.4181		9,799.3326	9,799.3326	0.3884		9,809.0429
Unmitigated	1.8085	7.2478	24.6625	0.0965	8.8041	0.0686	8.8727	2.3543	0.0638	2.4181		9,799.3326	9,799.3326	0.3884		9,809.0429

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	0.00	0.00	0.00		
Office Park	1,228.40	0.00	0.00	2,964,525	2,964,525
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	1,228.40	0.00	0.00	2,964,525	2,964,525

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Office Park	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Office Park	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Non-Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Parking Lot	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
NaturalGas Unmitigated	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	199.077	2.1500e-003	0.0195	0.0164	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003		23.4208	23.4208	4.5000e-004	4.3000e-004	23.5600
Office Park	51.7101	5.6000e-004	5.0700e-003	4.2600e-003	3.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004		6.0836	6.0836	1.2000e-004	1.1000e-004	6.1197
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.7100e-003**	**0.0246**	**0.0207**	**1.5000e-004**		**1.8700e-003**	**1.8700e-003**		**1.8700e-003**	**1.8700e-003**		**29.5043**	**29.5043**	**5.7000e-004**	**5.4000e-004**	**29.6797**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	0.199077	2.1500e-003	0.0195	0.0164	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003		23.4208	23.4208	4.5000e-004	4.3000e-004	23.5600
Office Park	0.0517101	5.6000e-004	5.0700e-003	4.2600e-003	3.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004		6.0836	6.0836	1.2000e-004	1.1000e-004	6.1197
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.7100e-003**	**0.0246**	**0.0207**	**1.5000e-004**		**1.8700e-003**	**1.8700e-003**		**1.8700e-003**	**1.8700e-003**		**29.5043**	**29.5043**	**5.7000e-004**	**5.4000e-004**	**29.6797**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Unmitigated	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.2000e-004	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Total	**0.2298**	**4.0000e-005**	**4.4700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5700e-003**	**9.5700e-003**	**3.0000e-005**		**0.0102**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.2000e-004	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Total	**0.2298**	**4.0000e-005**	**4.4700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5700e-003**	**9.5700e-003**	**3.0000e-005**		**0.0102**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	12	158	0.82	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

11.0 Vegetation

FUL_Terminal_121619

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Government Office Building	7.95	1000sqft	0.18	7,950.00	0
Office Park	1.66	1000sqft	0.04	1,660.00	0
Other Asphalt Surfaces	12.60	1000sqft	0.29	12,600.00	0
Other Non-Asphalt Surfaces	6.00	1000sqft	0.14	6,000.00	0
Parking Lot	15.50	1000sqft	0.36	15,500.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2022
Utility Company	San Diego Gas & Electric				
CO2 Intensity (lb/MWhr)	720.49	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Demolition - Demolition includes 48,000 SF of asphalt paved and landscaped area. Assumed depth of demolition is 1.5 FT. Tons of debris assumes 2.1 CY of debris = 1 ton.

Grading -

Stationary Sources - Emergency Generators and Fire Pumps - Generator properties taken from defaults within AEDT (HP of 158; load factor of 0.82). Assumed use of once per year for 12 hours.

Stationary Sources - Process Boilers -

Vehicle Trips - The traffic analysis for the proposed project indicates that zero trips will be generated from the first floor (existing operations in the terminal building will not increase). The analysis also indicates that the second floor could introduce 740 daily trips during the week. It is assumed that no trips will be generated during the weekend.

Table Name	Column Name	Default Value	New Value
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	158.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	12.00
tblStationaryGeneratorsPumpsUse	Load_Factor	0.73	0.82
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.64	0.00
tblVehicleTrips	SU_TR	0.76	0.00
tblVehicleTrips	WD_TR	68.93	0.00
tblVehicleTrips	WD_TR	11.42	740.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.0880	21.3483	15.3188	0.0301	5.8890	1.0470	6.6550	2.9774	0.9772	3.6821	0.0000	2,974.9810	2,974.9810	0.6530	0.0000	2,991.3057
Maximum	**10.0880**	**21.3483**	**15.3188**	**0.0301**	**5.8890**	**1.0470**	**6.6550**	**2.9774**	**0.9772**	**3.6821**	**0.0000**	**2,974.9810**	**2,974.9810**	**0.6530**	**0.0000**	**2,991.3057**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.0880	21.3483	15.3188	0.0301	5.8890	1.0470	6.6550	2.9774	0.9772	3.6821	0.0000	2,974.9810	2,974.9810	0.6530	0.0000	2,991.3057
Maximum	**10.0880**	**21.3483**	**15.3188**	**0.0301**	**5.8890**	**1.0470**	**6.6550**	**2.9774**	**0.9772**	**3.6821**	**0.0000**	**2,974.9810**	**2,974.9810**	**0.6530**	**0.0000**	**2,991.3057**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Energy	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
Mobile	1.7773	7.4541	23.5274	0.0922	8.8041	0.0688	8.8730	2.3543	0.0640	2.4184		9,367.1923	9,367.1923	0.3869		9,376.8654
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.0098**	**7.4787**	**23.5525**	**0.0923**	**8.8041**	**0.0707**	**8.8749**	**2.3543**	**0.0659**	**2.4203**		**9,396.7062**	**9,396.7062**	**0.3875**	**5.4000e-004**	**9,406.5552**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Energy	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
Mobile	1.7773	7.4541	23.5274	0.0922	8.8041	0.0688	8.8730	2.3543	0.0640	2.4184		9,367.1923	9,367.1923	0.3869		9,376.8654
Stationary	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.0098**	**7.4787**	**23.5525**	**0.0923**	**8.8041**	**0.0707**	**8.8749**	**2.3543**	**0.0659**	**2.4203**		**9,396.7062**	**9,396.7062**	**0.3875**	**5.4000e-004**	**9,406.5552**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

FUL_Terminal_121619 - Orange County, Winter

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/4/2021	1/29/2021	5	20	
2	Site Preparation	Site Preparation	1/30/2021	2/2/2021	5	2	
3	Grading	Grading	2/3/2021	2/8/2021	5	4	
4	Building Construction	Building Construction	2/9/2021	11/15/2021	5	200	
5	Paving	Paving	11/16/2021	11/29/2021	5	10	
6	Architectural Coating	Architectural Coating	11/30/2021	12/13/2021	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.79

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 14,415; Non-Residential Outdoor: 4,805; Striped Parking Area: 2,046 (Architectural Coating – sqft)

OffRoad Equipment

FUL_Terminal_121619 - Orange County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	126.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	17.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3586	0.0000	1.3586	0.2057	0.0000	0.2057			0.0000			0.0000
Off-Road	1.9930	19.6966	14.4925	0.0241		1.0409	1.0409		0.9715	0.9715		2,322.7171	2,322.7171	0.5940		2,337.5658
Total	**1.9930**	**19.6966**	**14.4925**	**0.0241**	**1.3586**	**1.0409**	**2.3995**	**0.2057**	**0.9715**	**1.1772**		**2,322.7171**	**2,322.7171**	**0.5940**		**2,337.5658**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0465	1.6205	0.4619	4.6800e-003	0.1097	5.1200e-003	0.1148	0.0300	4.9000e-003	0.0349		522.8057	522.8057	0.0563		524.2124
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0531	0.0312	0.3644	1.3000e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		129.4582	129.4582	2.7700e-003		129.5275
Total	**0.0996**	**1.6517**	**0.8262**	**5.9800e-003**	**0.2550**	**6.0600e-003**	**0.2611**	**0.0686**	**5.7700e-003**	**0.0743**		**652.2639**	**652.2639**	**0.0590**		**653.7399**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.3586	0.0000	1.3586	0.2057	0.0000	0.2057			0.0000			0.0000
Off-Road	1.9930	19.6966	14.4925	0.0241		1.0409	1.0409		0.9715	0.9715	0.0000	2,322.7171	2,322.7171	0.5940		2,337.5658
Total	**1.9930**	**19.6966**	**14.4925**	**0.0241**	**1.3586**	**1.0409**	**2.3995**	**0.2057**	**0.9715**	**1.1772**	**0.0000**	**2,322.7171**	**2,322.7171**	**0.5940**		**2,337.5658**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0465	1.6205	0.4619	4.6800e-003	0.1097	5.1200e-003	0.1148	0.0300	4.9000e-003	0.0349		522.8057	522.8057	0.0563		524.2124
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0531	0.0312	0.3644	1.3000e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		129.4582	129.4582	2.7700e-003		129.5275
Total	**0.0996**	**1.6517**	**0.8262**	**5.9800e-003**	**0.2550**	**6.0600e-003**	**0.2611**	**0.0686**	**5.7700e-003**	**0.0743**		**652.2639**	**652.2639**	**0.0590**		**653.7399**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041		1,666.5174	1,666.5174	0.5390		1,679.9920
Total	**1.5558**	**17.4203**	**7.5605**	**0.0172**	**5.7996**	**0.7654**	**6.5650**	**2.9537**	**0.7041**	**3.6578**		**1,666.5174**	**1,666.5174**	**0.5390**		**1,679.9920**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.5558	17.4203	7.5605	0.0172		0.7654	0.7654		0.7041	0.7041	0.0000	1,666.5174	1,666.5174	0.5390		1,679.9920
Total	**1.5558**	**17.4203**	**7.5605**	**0.0172**	**5.7996**	**0.7654**	**6.5650**	**2.9537**	**0.7041**	**3.6578**	**0.0000**	**1,666.5174**	**1,666.5174**	**0.5390**		**1,679.9920**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9143	0.0000	4.9143	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869		1,365.0648	1,365.0648	0.4415		1,376.1020
Total	**1.2884**	**14.3307**	**6.3314**	**0.0141**	**4.9143**	**0.6379**	**5.5522**	**2.5256**	**0.5869**	**3.1125**		**1,365.0648**	**1,365.0648**	**0.4415**		**1,376.1020**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9143	0.0000	4.9143	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	1.2884	14.3307	6.3314	0.0141		0.6379	0.6379		0.5869	0.5869	0.0000	1,365.0648	1,365.0648	0.4415		1,376.1020
Total	**1.2884**	**14.3307**	**6.3314**	**0.0141**	**4.9143**	**0.6379**	**5.5522**	**2.5256**	**0.5869**	**3.1125**	**0.0000**	**1,365.0648**	**1,365.0648**	**0.4415**		**1,376.1020**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0327	0.0192	0.2242	8.0000e-004	0.0894	5.8000e-004	0.0900	0.0237	5.3000e-004	0.0243		79.6666	79.6666	1.7100e-003		79.7092
Total	**0.0327**	**0.0192**	**0.2242**	**8.0000e-004**	**0.0894**	**5.8000e-004**	**0.0900**	**0.0237**	**5.3000e-004**	**0.0243**		**79.6666**	**79.6666**	**1.7100e-003**		**79.7092**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608		2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**		**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0196	0.6552	0.1954	1.6800e-003	0.0447	1.4200e-003	0.0461	0.0129	1.3500e-003	0.0142		183.5323	183.5323	0.0155		183.9192
Worker	0.0695	0.0408	0.4765	1.7000e-003	0.1900	1.2300e-003	0.1913	0.0504	1.1300e-003	0.0515		169.2915	169.2915	3.6300e-003		169.3821
Total	**0.0891**	**0.6960**	**0.6719**	**3.3800e-003**	**0.2347**	**2.6500e-003**	**0.2374**	**0.0633**	**2.4800e-003**	**0.0658**		**352.8238**	**352.8238**	**0.0191**		**353.3013**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8125	13.6361	12.8994	0.0221		0.6843	0.6843		0.6608	0.6608	0.0000	2,001.2200	2,001.2200	0.3573		2,010.1517
Total	**1.8125**	**13.6361**	**12.8994**	**0.0221**		**0.6843**	**0.6843**		**0.6608**	**0.6608**	**0.0000**	**2,001.2200**	**2,001.2200**	**0.3573**		**2,010.1517**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0196	0.6552	0.1954	1.6800e-003	0.0447	1.4200e-003	0.0461	0.0129	1.3500e-003	0.0142		183.5323	183.5323	0.0155		183.9192
Worker	0.0695	0.0408	0.4765	1.7000e-003	0.1900	1.2300e-003	0.1913	0.0504	1.1300e-003	0.0515		169.2915	169.2915	3.6300e-003		169.3821
Total	**0.0891**	**0.6960**	**0.6719**	**3.3800e-003**	**0.2347**	**2.6500e-003**	**0.2374**	**0.0633**	**2.4800e-003**	**0.0658**		**352.8238**	**352.8238**	**0.0191**		**353.3013**

3.6 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830		1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9442**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**		**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0531	0.0312	0.3644	1.3000e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		129.4582	129.4582	2.7700e-003		129.5275
Total	**0.0531**	**0.0312**	**0.3644**	**1.3000e-003**	**0.1453**	**9.4000e-004**	**0.1463**	**0.0385**	**8.7000e-004**	**0.0394**		**129.4582**	**129.4582**	**2.7700e-003**		**129.5275**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.7739	7.7422	8.8569	0.0135		0.4153	0.4153		0.3830	0.3830	0.0000	1,296.8664	1,296.8664	0.4111		1,307.1442
Paving	0.1703					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9442**	**7.7422**	**8.8569**	**0.0135**		**0.4153**	**0.4153**		**0.3830**	**0.3830**	**0.0000**	**1,296.8664**	**1,296.8664**	**0.4111**		**1,307.1442**

3.6 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0531	0.0312	0.3644	1.3000e-003	0.1453	9.4000e-004	0.1463	0.0385	8.7000e-004	0.0394		129.4582	129.4582	2.7700e-003		129.5275
Total	**0.0531**	**0.0312**	**0.3644**	**1.3000e-003**	**0.1453**	**9.4000e-004**	**0.1463**	**0.0385**	**8.7000e-004**	**0.0394**		**129.4582**	**129.4582**	**2.7700e-003**		**129.5275**

3.7 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.8568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	**10.0757**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**		**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0123	7.2000e-003	0.0841	3.0000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		29.8750	29.8750	6.4000e-004		29.8910
Total	**0.0123**	**7.2000e-003**	**0.0841**	**3.0000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**29.8750**	**29.8750**	**6.4000e-004**		**29.8910**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.8568					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	**10.0757**	**1.5268**	**1.8176**	**2.9700e-003**		**0.0941**	**0.0941**		**0.0941**	**0.0941**	**0.0000**	**281.4481**	**281.4481**	**0.0193**		**281.9309**

3.7 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0123	7.2000e-003	0.0841	3.0000e-004	0.0335	2.2000e-004	0.0338	8.8900e-003	2.0000e-004	9.0900e-003		29.8750	29.8750	6.4000e-004		29.8910
Total	**0.0123**	**7.2000e-003**	**0.0841**	**3.0000e-004**	**0.0335**	**2.2000e-004**	**0.0338**	**8.8900e-003**	**2.0000e-004**	**9.0900e-003**		**29.8750**	**29.8750**	**6.4000e-004**		**29.8910**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7773	7.4541	23.5274	0.0922	8.8041	0.0688	8.8730	2.3543	0.0640	2.4184		9,367.1923	9,367.1923	0.3869		9,376.8654
Unmitigated	1.7773	7.4541	23.5274	0.0922	8.8041	0.0688	8.8730	2.3543	0.0640	2.4184		9,367.1923	9,367.1923	0.3869		9,376.8654

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Government Office Building	0.00	0.00	0.00		
Office Park	1,228.40	0.00	0.00	2,964,525	2,964,525
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	1,228.40	0.00	0.00	2,964,525	2,964,525

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Government Office Building	16.60	8.40	6.90	33.00	62.00	5.00	50	34	16
Office Park	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Government Office Building	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Office Park	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Other Non-Asphalt Surfaces	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934
Parking Lot	0.561378	0.043284	0.209473	0.111826	0.015545	0.005795	0.025829	0.017125	0.001747	0.001542	0.004926	0.000594	0.000934

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797
NaturalGas Unmitigated	2.7000e-003	0.0246	0.0207	1.5000e-004		1.8700e-003	1.8700e-003		1.8700e-003	1.8700e-003		29.5043	29.5043	5.7000e-004	5.4000e-004	29.6797

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	199.077	2.1500e-003	0.0195	0.0164	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003		23.4208	23.4208	4.5000e-004	4.3000e-004	23.5600
Office Park	51.7101	5.6000e-004	5.0700e-003	4.2600e-003	3.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004		6.0836	6.0836	1.2000e-004	1.1000e-004	6.1197
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.7100e-003**	**0.0246**	**0.0207**	**1.5000e-004**		**1.8700e-003**	**1.8700e-003**		**1.8700e-003**	**1.8700e-003**		**29.5043**	**29.5043**	**5.7000e-004**	**5.4000e-004**	**29.6797**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Government Office Building	0.199077	2.1500e-003	0.0195	0.0164	1.2000e-004		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003		23.4208	23.4208	4.5000e-004	4.3000e-004	23.5600
Office Park	0.0517101	5.6000e-004	5.0700e-003	4.2600e-003	3.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004		6.0836	6.0836	1.2000e-004	1.1000e-004	6.1197
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.7100e-003**	**0.0246**	**0.0207**	**1.5000e-004**		**1.8700e-003**	**1.8700e-003**		**1.8700e-003**	**1.8700e-003**		**29.5043**	**29.5043**	**5.7000e-004**	**5.4000e-004**	**29.6797**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Unmitigated	0.2298	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.2000e-004	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Total	**0.2298**	**4.0000e-005**	**4.4700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5700e-003**	**9.5700e-003**	**3.0000e-005**		**0.0102**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0270					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.2024					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.2000e-004	4.0000e-005	4.4700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		9.5700e-003	9.5700e-003	3.0000e-005		0.0102
Total	**0.2298**	**4.0000e-005**	**4.4700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**9.5700e-003**	**9.5700e-003**	**3.0000e-005**		**0.0102**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	12	158	0.82	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (100 - 175 HP)	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

11.0 Vegetation

Attachment C

Construction Noise Analysis

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

December 19, 2019 CSE-13

Nicholas Alex
C&S Engineers
2355 Northside Drive, Suite 350
San Diego, CA 92108

Subject: Fullerton Airport Project – Construction Noise Analysis

Dear Mr. Alex:

HELIX Environmental Planning, Inc. (HELIX) has performed an analysis of construction noise and vibration impacts for the proposed Fullerton Airport Project (project). This letter summarizes the methodology and results of the noise and vibration analysis.

PROJECT DESCRIPTION AND ENVIRONMENTAL SETTING

The proposed project involves the construction of a new two-story building with associated site and parking lot modifications (refer to Attachment A). The building would be 7,950 square feet and would provide office space on the ground floor and a multi-purpose room on the second floor. Demolition of the existing parking lot and some airport apron pavement would be required prior to construction. Construction of the proposed improvements would only occur during daytime hours.

The project site is located within the southern portion of the Fullerton Municipal Airport, north of the intersection of Commonwealth Avenue and South Edward Street in the city of Fullerton (City). The site is located adjacent to the existing Fullerton Municipal Airport terminal and air traffic control tower building. Additional airport operations occur to the north, west, and east of the project site. Commercial and residential land uses are located across Commonwealth Avenue to the south.

FUNDAMENTALS OF NOISE/SOUND AND VIBRATION

Noise/Sound

All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration.

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver contribute to the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

The amplitude of pressure waves generated by a sound source determines the loudness of that source. A logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA units. The threshold of hearing for the human ear is approximately 0 dBA, which corresponds to 20 micro Pascals (mPa).

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.

Vibration

Vibration is defined as any oscillatory motion induced in a structure or mechanical device as a direct result of some type of input excitation. Sources of ground-borne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or manufactured (explosions, trains, machinery, traffic, construction equipment, etc.). Vibration sources may be transient, steady-state (continuous), or pseudo steady-state. Examples of transient construction vibrations are those that occur from blasting with explosives, impact pile driving, demolition, and wrecking balls.

Ambient and source vibration information are expressed in terms of the peak particle velocity (PPV) in inches per second (in/sec). The root mean square (RMS) of a signal is the average of the squared amplitude of the signal in decibels (relative to 1 micro-in/sec). Because the net average of a vibration signal is zero, the RMS amplitude is used to describe the “smoothed” vibration amplitude. The RMS amplitude is always less than the PPV and is always positive. The RMS average is typically calculated over a one-second period.

The background vibration velocity level in residential areas is usually 50 vibration decibels (VdB) or lower; this is well below the level perceptible by humans, which is approximately 65 VdB. Most perceptible indoor vibration is caused by sources within buildings, such as the operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible.

NOISE MODELING SOFTWARE

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

EXISTING SENSITIVE LAND USES

Noise sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise and generally include residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. NSLUs in the project vicinity include the residential land uses located to the south of the project site across Commonwealth Avenue.

EXISTING NOISE SETTING

The proposed project site is in an urban area surrounded by Fullerton Municipal Airport, commercial land uses, and residential land uses. Existing noise sources in the immediate vicinity of the project site include aircraft operations associated with Fullerton Municipal Airport and vehicular traffic along Commonwealth Avenue. An ambient noise measurement survey was conducted on December 13, 2019 at and near the project site and included two 10-minute measurements. Noise measurement locations and results are shown in Table 1, *Ambient Noise Measurement Survey*.

Table 1
AMBIENT NOISE MEASUREMENT SURVEY

Measurement	Location	Time	Noise Level (dBA L_{EQ})
M1	Airport parking lot	10:17 a.m. – 10:27 a.m.	66.3
M2	South side of Commonwealth Avenue	10:37 a.m. – 10:47 a.m.	69.5

NOISE REGULATIONS

City of Fullerton Municipal Code

The City's Municipal Code Chapter 15.90.030 (Noise standards) limits exterior noise levels at residential properties to 55 dBA from 7:00 a.m. to 10:00 p.m. and 50 dBA from 10:00 p.m. to 7:00 a.m.

The City's Municipal Code Chapter 15.90.050 (Activities with special provisions) exempts construction noise from its noise standards provided that construction occurs between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday, and not on Sundays or holidays.

ANALYSIS AND IMPACTS

Construction Noise Levels

Construction of the proposed project would involve demolishing existing pavements, installing underground utilities, fine grading, building the new structure, and repaving the site. The magnitude of the impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and intervening structures. Construction would generate elevated noise levels that may by audible at nearby airport, commercial, and residential uses in the vicinity of the project site.

Construction equipment would not all operate at the same time or location. Furthermore, construction equipment would not be in constant use during the 8-hour operating day. Table 2, *Construction Equipment Noise Levels*, provides the 50-foot distance noise levels for expected construction equipment.

Table 2
CONSTRUCTION EQUIPMENT NOISE LEVELS

Unit	Percent Operating Time	dBA L_{MAX} at 50 feet	dBA L_{EQ} at 50 feet
Backhoe	40	77.6	73.6
Breaker	20	90.3	80.3
Compactor	20	83.2	76.2
Compressor	40	77.7	73.7
Concrete Mixer Truck	40	78.8	74.8
Concrete Pump Truck	20	81.4	74.4
Concrete Saw	20	89.6	82.6
Crane	16	80.6	76.7
Dump Truck	50	76.5	72.5
Drum Mixer	40	80.0	77.0
Medium Excavator	40	78.0	74.0
Large Excavator	40	80.7	76.7
Front-End Loader	40	79.1	75.1
Paver	50	77.2	74.2
Roller	20	80.0	73.0

Source: USDOT 2008

The project's construction activities that would generate the highest noise levels would be the demolition of existing pavements, installation of underground utilities, and construction of the new building. An excavator and front-end loader would likely be used simultaneously for both underground utility installation and building construction and are anticipated to be the loudest combination of equipment for these two construction activities. The nearest off-site NSLUs would be the residences located above the commercial uses on the south side of Commonwealth Avenue. The project's underground utility installation and building construction would occur approximately 180 feet from these NSLUs. At a distance of 180 feet, the simultaneous use of an excavator and front-end loader would generate a noise level of 67.9 dBA L_{EQ}.

Pavement demolition would be required for the existing parking lot and a portion of airport apron that is within the eastern part of the proposed building footprint. An excavator would likely be used for demolition of the parking lot, which would occur at an approximate distance of 90 feet when at the southern end of the parking lot, closest to the off-site NSLUs across Commonwealth Avenue. At a distance of 90 feet, an excavator would generate a noise level of 71.6 dBA L_{EQ}.

For demolition of the portion of the airport apron, which is composed of a thicker and more durable material than the parking lot, a concrete saw or breaker may be required. If used, these pieces of equipment would operate approximately 180 feet from the nearest NSLUs across Commonwealth Avenue. At a distance of 180 feet, a concrete saw would generate a noise level of 71.5 dBA L_{EQ} and a breaker would generate a noise level of 72.2 dBA L_{EQ}.

The City's Municipal Code Chapter 15.90.050 exempts construction noise from its noise standards provided that construction occurs between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday, and not on Sundays or holidays. Because project-related construction activities would only occur within the hours specified in the City's Municipal Code, the proposed project would not result in a violation of the City's construction noise standards, and impacts would be less than significant.

Construction Vibration

The primary source of vibration during project construction would be a vibratory roller (primarily used to achieve soil compaction for the building foundation and new pavement). Due to its mobile nature of operations, the use of a vibratory roller during construction would occur at an average distance, over the course of a workday, of 130 feet from the nearest off-site residential and commercial land uses located across Commonwealth Avenue. A vibratory roller creates approximately 0.21 in/sec PPV at a distance of 25 feet. At a distance of 130 feet, a vibratory roller would create a PPV of 0.03 in/sec.[1] This would be below the distinctly perceptible vibration annoyance potential criteria of 0.04 in/sec PPV as provided in the California Department of Transportation's (Caltrans') Transportation and Construction Vibration Guidance Manual (Caltrans 2013) for continuous/frequent intermittent sources. Though vibration levels may be perceptible to people at nearby land uses, the levels would be low and would occur for short periods of time. As such, vibration impacts to humans would be less than significant.

CONCLUSIONS

Construction of the proposed project would not result in significant impacts related to noise or vibration and no noise attenuation mitigation is required.

[1] Equipment PPV = Reference PPV * $(25/D)^n$(in/sec), where Reference PPV is PPV at 25 feet, D is distance from equipment to the receptor in feet, and n= 1.1 (the value related to the attenuation rate through the ground); formula from Caltrans 2013.

CLOSING

We appreciate the opportunity to work with you on this project. Please let me know if you have any questions or require any further information.

Regards,

Charles Terry
Principal Specialist, Noise, Acoustics & Vibration

Hunter Stapp
Noise Analyst

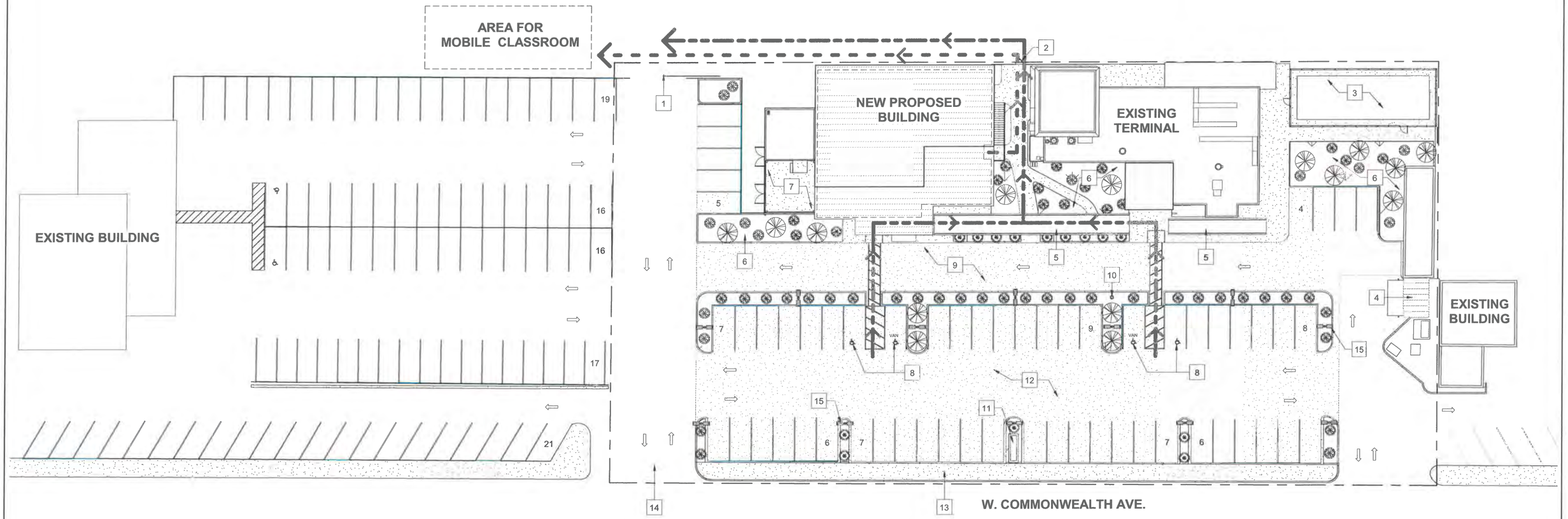
Attachments:

Attachment A – Site Plan

REFERENCES

California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Guidance Manual. September.

U.S. Department of Transportation (USDOT). 2008. Roadway Construction Noise Model (RCNM).



KEYNOTES

1	NEW ROLLING SECURITY GATE ACCES
2	NEW GATE ACCESS
3	NEW OUTDOOR RESTAURANT PATIO
4	NEW TRASH ENCLOSURE
5	NEW BREEZEWAY CANOPY
6	NEW XERISCAPE AREA
7	MECHANICAL WELL
8	NEW ACCESSIBLE PARKING
9	NEW DROP OFF AREA
10	NEW FLAGPOLE
11	NEW AIRPORT MONUMENT/SIGNAGE
12	NEW PAVEMENT
13	NEW SIDEWALK
14	NEW DRIVEWAY LOCATION
15	NEW PARKING LOT LIGHT FIXTURES

LEGEND

- PATH OF TRAVEL TO RESTROOMS
- ACCESSIBLE PATH OF TRAVEL FROM PARKING
- LIMIT OF WORK

PARKING

TOTAL EXISTING PARKING	135	SPACES
NEW PROPOSED PARKING	142	STANDARD PARKING SPACES
	6	ACCESSIBLE PARKING SPACES
	148	TOTAL PARKING SPACES

Seal

THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF:
DEVELOPMENT ONE, INC
ARCHITECTURE | PROJECT MANAGEMENT
1611 East Fourth Street, Suite 250
Santa Ana, California 92701
J. Bruce Camilo, Architect, AIA, NCARB
(714) 689-0298

	INITIAL	DATE
DRAWN		
DESIGNED		

REVISIONS

DATE	DESCRIPTION	APPROVED	INITIAL	DATE

DATE PRINTED: Issue Date
DATE SITED: 11/02/16

SITE PLAN — SCALE: 1" = 20'-0"

CITY OF FULLERTON
OFFICE OF THE DIRECTOR OF PUBLIC WORKS

SITE PLAN

FULLERTON TERMINAL EXPANSION

Enter address here

APPROVED: _____ DATE
WATER SYSTEM MANAGER/ASSISTANT CITY ENGINEER

APPROVED: _____ DATE
DIRECTOR OF PUBLIC WORKS

SCALE: AS NOTED | F.B. | PG. | SHEET OF 40 SHEETS

B.M.: | FILE: MISC. 5099 | SHEET # A1.0

Attachment D

Traffic Study

C&S Companies
2355 Northside Dr.
Suite 350
San Diego, CA 92108
p: (619) 296-9373
f: (619) 296-5683
www.cscos.com

February 26, 2020

David Grantham, P.E., Senior Civil Engineer
City of Fullerton Public Works-Engineering
303 W. Commonwealth Avenue
Fullerton, CA 92832-1775

Re: Revised Traffic Impact Study
Fullerton Airport Terminal Expansion Traffic Analysis

File: N60.001.006

Dear Mr. Grantham:

This letter summarizes our findings for a traffic impact study for the proposed terminal expansion project at Fullerton Airport. The proposed terminal expansion consists of a new 7,950 square foot building located at 4011 West Commonwealth Avenue. Our study found that there are very minor impacts to the study area intersections, and our methodology and findings are detailed in the remainder of this letter.

Project Overview
The project is a new 7,950 square foot (SF) building located at 4011 West Commonwealth Avenue. The first floor is expected to be an expansion of the existing terminal to accommodate existing staff and operations. The second floor will include three multi-purpose rooms totaling 1,660 SF that would be available for rent for meetings and events. The project is anticipated to generate additional traffic when the rooms are rented. The first floor expansion will be used for existing staff and operations, and is therefore not anticipated to generate any new traffic. See Figure 8 at the end of this document for a proposed site plan.

Study Area
The study area consists of intersections along Commonwealth Avenue, just south of the Fullerton Municipal Airport. The area is urban with a mix of commercial and residential buildings. There are five study intersections, three signalized and two unsignalized under two-way stop control.

Signalized
Commonwealth Avenue & Dale Street
Commonwealth Avenue & North Magnolia Avenue
Commonwealth Avenue & Gilbert Street

Unsignalized
Commonwealth Avenue & South Edward Avenue
Commonwealth Avenue & West Driveway
Commonwealth Avenue & East Driveway

Commonwealth Avenue & Turner Avenue

See Figure 1 at this end of this letter for the project location map.

Methodology

The study intersections were analyzed using SYNCHRO 10, which is a computer program that implements the methods presented in the Highway Capacity Manual[1]. SYNCHRO determines the vehicle **Level of Service (LOS)**, which is defined in terms of **Delay**.

Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time.

Level of Service criteria are stated in terms of the control delay per vehicle for a 15-minute analysis period and range from A to F. Level of Service A is representative of a movement that is free flowing with minimal delay, while LOS F generally represents long delays. LOS D is generally considered acceptable in urban environments.

The ranges of delay for each level of service, as contained in the Highway Capacity Manual, are shown in Table 1.

Table 1: Intersection Level of Service Criteria

Level of Service (LOS)	Signalized Intersections	Unsignalized Intersections
	Delay (sec)	Delay (sec)
A	0-10	0-10
B	> 10-20	> 10-15
C	> 20-35	> 15-25
D	> 35-55	> 25-35
E	> 55-80	> 35-50
F	over 80	over 50

Additionally, the study intersections determined pedestrian and bicyclist LOS at the signalized intersections using HCS7. HCS7 uses the concepts from the Highway Capacity Manual (HCM), 6th Edition. HCS7 has multimodal analysis for pedestrians and bicyclists. Chapter 19 of the Highway Capacity Manual outlines LOS criterion for pedestrian and bicyclist LOS. Pedestrian and bicyclist LOS at signalized intersections is based on a perceived quality of service. Features that are factored into the LOS calculations for pedestrians are sidewalk widths, crossing distances, turning vehicles, the availability of pedestrian signals, number of pedestrians, etc. Bicyclists have similar features factored into their LOS calculations such as availability of bike lanes, on-street parking, number of vehicles, curbing, etc. Table 2 below outlines the LOS criteria for pedestrians and bicyclists as in Chapter 19 of the HCM.

[1] Highway Capacity Manual, Transportation Research Board. Washington, D.C. 2016.

Table 2: Intersection Level of Service Criteria for Pedestrians and Bicyclists

Level of Service (LOS)	Signalized Intersections
	LOS Score
A	≤ 1.50
B	> 1.50-2.50
C	> 2.50-3.50
D	> 3.50-4.50
E	> 4.50-5.50
F	> 5.50

The effects of the proposed development on the adjacent roadway network were measured by comparing the operations of the study intersections as they operate under existing conditions versus the no build and build scenarios. A significant impact to the study area intersections due to the proposed project is determined by the following criteria:

Signalized Intersections: Existing intersections operating at an acceptable LOS of D or better, degrade to a LOS E or F.

Unsignalized Intersections: Existing intersections operating at an acceptable LOS of D or better, degrade to a LOS E or F, and if the California Manual on Uniform Traffic Control (CA MUTCD) peak hour traffic signal warrant is satisfied.

Existing Conditions

Roadway Conditions

Commonwealth Avenue is classified as a primary arterial. The posted speed limit is 40 MPH. The typical section of Commonwealth Avenue in the study area consists of two westbound travel lanes, a two way left turn lane, and two eastbound travel lanes with intermittent on-street parking. There is no on-street parking westbound adjacent to the project driveways.

Pedestrian Accommodations

The southern side of Commonwealth Avenue has concrete sidewalks the entire stretch of the study area. The sidewalk widths vary from 5 feet to 10 feet with the majority being adjacent to the curb. There is a section of sidewalk which contains a grass buffer between Dale Street to south of South Edwards Street. The northern side of Commonwealth Avenue has existing concrete sidewalks from Magnolia Street to Gilbert Street. There are no sidewalks available on the northern side of Commonwealth Avenue at the project site. Commonwealth Avenue is void of bicycle accommodations such as bicycle lanes, shoulders, or pavement markings such as sharrows.

The three signalized intersections in the study area are equipped with pedestrian signals and pushbuttons. There are marked crosswalks, and curb ramps on each intersection corner with detectable warning units.

Traffic Volumes

Turning movement counts (TMCs) were collected by Quality Counts on Tuesday, December 10, 2019. Morning peak hour TMCs were collected between 7:00-9:00 AM, with the peak hour being 7:15 – 8:15 AM. Evening TMCs were collected from 4:00-6:00 PM with a peak hour of 4:45 – 5:45 PM. See Figure 2 at the end of this letter for existing turning movement volumes.

Bicycle and pedestrian counts were also collected with the TMCs. Pedestrians and bicyclists were minimal at each intersection during the peak hour. There were at most ten pedestrians crossing a leg during the PM peak hour at the intersection of Gilbert Street. During the PM peak, Commonwealth Avenue had up to 5 bicyclists crossing each intersection. Appendix D contains the raw turning movement counts which includes bicyclists and pedestrians.

Existing Analysis

A LOS analysis was completed at each study intersection for the morning and evening peak hours. Intersection geometry was gathered from online mapping sources and signal timing and phasing information was provided by the City's traffic consultant. Table 3 highlights the existing LOS for intersections along Commonwealth Avenue. The SYNCHRO reports are included in Appendix A.

Vehicles

For existing conditions, the signalized intersections operate an acceptable overall average LOS. Gilbert Street and Commonwealth Avenue operates at a LOS D, and the remaining intersections operate at an overall LOS B and C.

Table 3: Existing Vehicle LOS

Intersection	Description	AM		PM	
		Existing (2019)		Existing (2019)	
		LOS	Delay	LOS	Delay
Commonwealth Avenue & Dale Street	Signalized	B	16.7	B	16.2
Commonwealth Avenue & South Edward Avenue	Unsignalized	B	12.4	B	11.5
Commonwealth Avenue & West Driveway	Unsignalized	B	12.5	B	13.6
Commonwealth Avenue & East Driveway	Unsignalized	B	10.4	C	15.7
Commonwealth Avenue & Turner Avenue	Unsignalized	B	11.6	B	12.8
Commonwealth Avenue & North Magnolia Avenue	Signalized	B	17.9	B	16.5
Commonwealth Avenue & Gilbert Street	Signalized	D	40.5	D	41.6

Pedestrians and Bicyclists

Under existing conditions, the majority of pedestrian and bicycle conditions are at an acceptable LOS C or better. The exception to this is the southbound approach for bicyclists at the intersection of Commonwealth Avenue and Gilbert Street. This intersection has a heavy right turn vehicle movement with the absence of bicycle lanes or delineated shoulders. These

conditions are not favorable for bicyclist conditions at an intersection. The HCS reports are included in Appendix B and the LOS tables are included in Appendix E.

No-Build Conditions

Background Growth

Historical traffic data for the City of Fullerton was provided to determine a background growth rate. ATR data was available along Commonwealth Avenue within the project limits, and a 3% growth rate was calculated. Typically the City uses a 0.5% growth rate for near term projects. However, the calculated 3% growth rate was used to be more conservative. The projected opening year for the facility is 2022, and the existing volumes were compounded annually using the growth rate to develop future no-build volumes.

Traffic Volumes

Figure 3 represents future (2022) no build weekday peak hour turning movement volumes.

No Build Analysis

Vehicles

Table 4 shows the results of the no-build LOS analysis. The SYNCHRO reports are included in Appendix A.

For signalized intersections along Commonwealth Avenue, all are still operating at a LOS D or better. There were no changes from existing conditions, with the exception of minor increases in delay.

Table 4: No Build LOS

Intersection	Description	AM		PM	
		No-Build (2022)		No-Build (2022)	
		LOS	Delay	LOS	Delay
Commonwealth Avenue & Dale Street	Signalized	B	17.9	B	17.6
Commonwealth Avenue & South Edward Avenue	Unsignalized	B	13.1	B	11.8
Commonwealth Avenue & West Driveway	Unsignalized	B	13.1	B	14.3
Commonwealth Avenue & East Driveway	Unsignalized	B	10.7	C	16.8
Commonwealth Avenue & Turner Avenue	Unsignalized	B	12.0	B	13.4
Commonwealth Avenue & North Magnolia Avenue	Signalized	B	18.3	B	17.4
Commonwealth Avenue & Gilbert Street	Signalized	D	47.5	D	48.8

Pedestrians and Bicyclists

There were negligible changes from the existing condition for pedestrians and bicyclists. There was only a small increase in the LOS value due to the natural increase in vehicles, which affects the pedestrian and bicyclist LOS. The HCS reports are included in Appendix B.

Build Condition

Trip Generation

Appendix C is a technical memorandum that contains the methodology for the trip generation and distribution of the terminal expansion project that was reviewed and accepted by the City's traffic consultant. The trip generation was based on estimated parking demand in the December 2018 Parking Management Study. The ITE Trip Generation Manual does not have any land use codes that directly correlate to the proposed use of this facility. Therefore, the Parking Management Study, December 2018, was used to determine the trip generation. The trips associated with this facility would not necessarily follow existing traffic patterns during peak hours since they are not associated with typical commuter traffic. However, to be conservative, the trips for the facility were added to the AM and PM peak hour scenarios. Table 5 below shows the trip generation values.

Table 5: Trip Generation

Development Area	Total New Trips	Total Entering Trips	Total Exiting Trips
1,660 SF	74	37	37

Trip Distribution

Access to the site is via two driveways on Commonwealth Avenue between Dale Street and Magnolia Avenue. Based on discussions with the City's traffic engineer and given the location of the project and the roadway network, the following assumptions were made regarding general distribution and routing:

- 20% from the north: traffic would travel to/from Dale Street from the northwest (10%) and to/from Gilbert Street from the northeast (10%)
- 25% from the east: traffic would travel along West Commonwealth Avenue through the intersection at Dale Street
- 30% from the south: traffic would travel to/from Magnolia Avenue
- 25% from the west: traffic would travel along West Commonwealth Avenue through the intersection at Magnolia Avenue

The exiting trips would flow in the opposite direction via the same routes. See Figure 4 for the trip distribution during the peak hours.

Build Analysis

Vehicles

The study area was analyzed using the build volumes shown in Figure 7. The results are shown and compared with the existing plus project and no build scenario in Tables 6 and 7. The results show that the proposed development has very minor impacts to the project area. There were some minor increases in delay for approaches, however there were no changes in a LOS value. Note that the delay slightly improved for the southbound approach at the West Driveway because it was relocated to the west side of the intersection of Commonwealth Avenue and South Edward Street. There were no changes in LOS from the No-Build to the Build condition, only negligible changes in delay. The project driveways are anticipated to operate at a LOS D or better. The SYNCHRO reports are included in Appendix A.

Table 6: AM Build LOS Comparison

Intersection	Description	AM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS	Delay	LOS	Delay	LOS	Delay
Commonwealth Avenue & Dale Street	Signalized	B	16.8	B	17.9	B	18.0
Commonwealth Avenue & West Driveway	Unsignalized	B	11.3	B	13.1	B	11.8
Commonwealth Avenue & South Edward Avenue	Unsignalized	B	12.6	B	13.1	B	13.1
Commonwealth Avenue & East Driveway	Unsignalized	B	11.0	B	10.7	B	11.3
Commonwealth Avenue & Turner Avenue	Unsignalized	B	11.7	B	12.0	B	12.1
Commonwealth Avenue & North Magnolia Avenue	Signalized	B	18.5	C	20.2	C	21.0
Commonwealth Avenue & Gilbert Street	Signalized	D	40.8	D	47.5	D	47.9

Table 7: PM Build LOS Comparison

Intersection	Description	PM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Dale Street	Signalized	B	16.3	B	17.6	B	17.7
Commonwealth Avenue & West Driveway	Unsignalized	B	12.7	B	14.3	B	13.7
Commonwealth Avenue & South Edward Avenue	Unsignalized	B	11.6	B	11.8	B	11.8
Commonwealth Avenue & East Driveway	Unsignalized	C	19.0	C	16.8	C	20.8
Commonwealth Avenue & Turner Avenue	Unsignalized	B	13.0	B	13.4	B	13.6
Commonwealth Avenue & North Magnolia Avenue	Signalized	B	16.8	B	17.4	B	17.8
Commonwealth Avenue & Gilbert Street	Signalized	D	42.1	D	48.8	D	49.4

Pedestrians and Bicyclists
The build conditions have no effect on the pedestrian and bicyclist LOS. There are no changes in LOS between the two scenarios. The HCS reports are included in Appendix B.

Mitigation
Since the projected traffic volumes due to the proposed terminal expansion have a minor impact on intersection operations for vehicles, pedestrians, and bicyclists, no mitigation is recommended at this time. The impact is small increases in delay at the intersections, but no changes in a LOS value.

Conclusions and Recommendations
The project development does not affect the LOS at any of the intersections in the study area. All study intersections will continue to operate at an acceptable LOS D or better with the project. Therefore, no mitigation is recommended due to the construction of this project.

If you have any questions or would like additional information, please call me at (315) 455-2000.

Sincerely,

C&S ENGINEERS, INC.

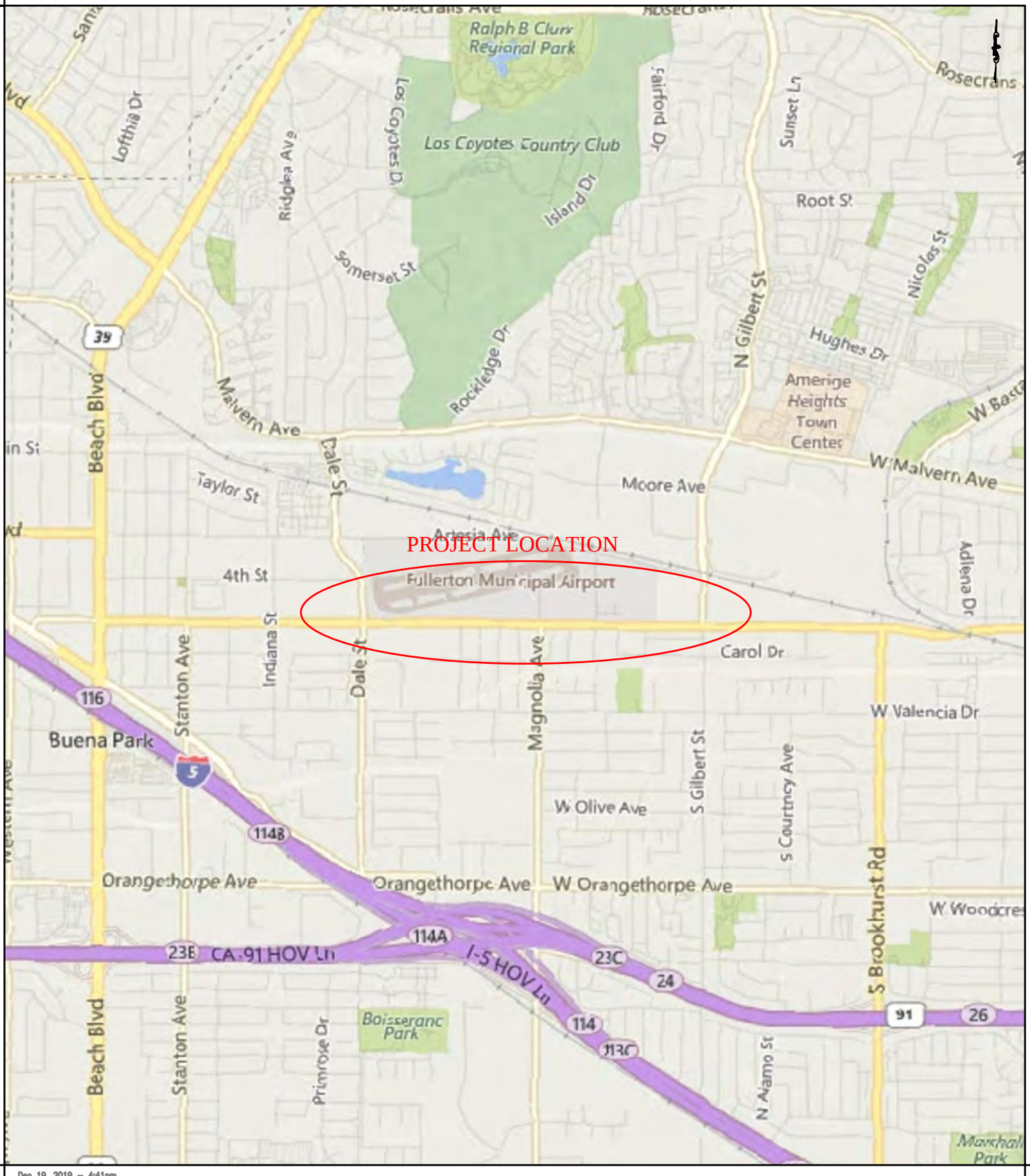
Kelsey Wessel

Kelsey Wessel, P.E.
Senior Project Engineer

Figures:
Figure 1 – Location Map
Figure 2 – Existing Traffic Volumes
Figure 3 – No Build Traffic Volumes
Figure 4 – Trip Distribution
Figure 5 – Trip Generation
Figure 6 – Existing Plus Project Traffic Volumes
Figure 7 – Build Traffic Volumes
Figure 8 – Proposed Site Plan

Appendix A: Synchro Reports
Appendix B: HCS Reports
Appendix C: Trip Generation Memo
Appendix D: Raw Traffic Data
Appendix E: Level of Service Tables

Figures



Dec 19, 2019 – 4:41pm
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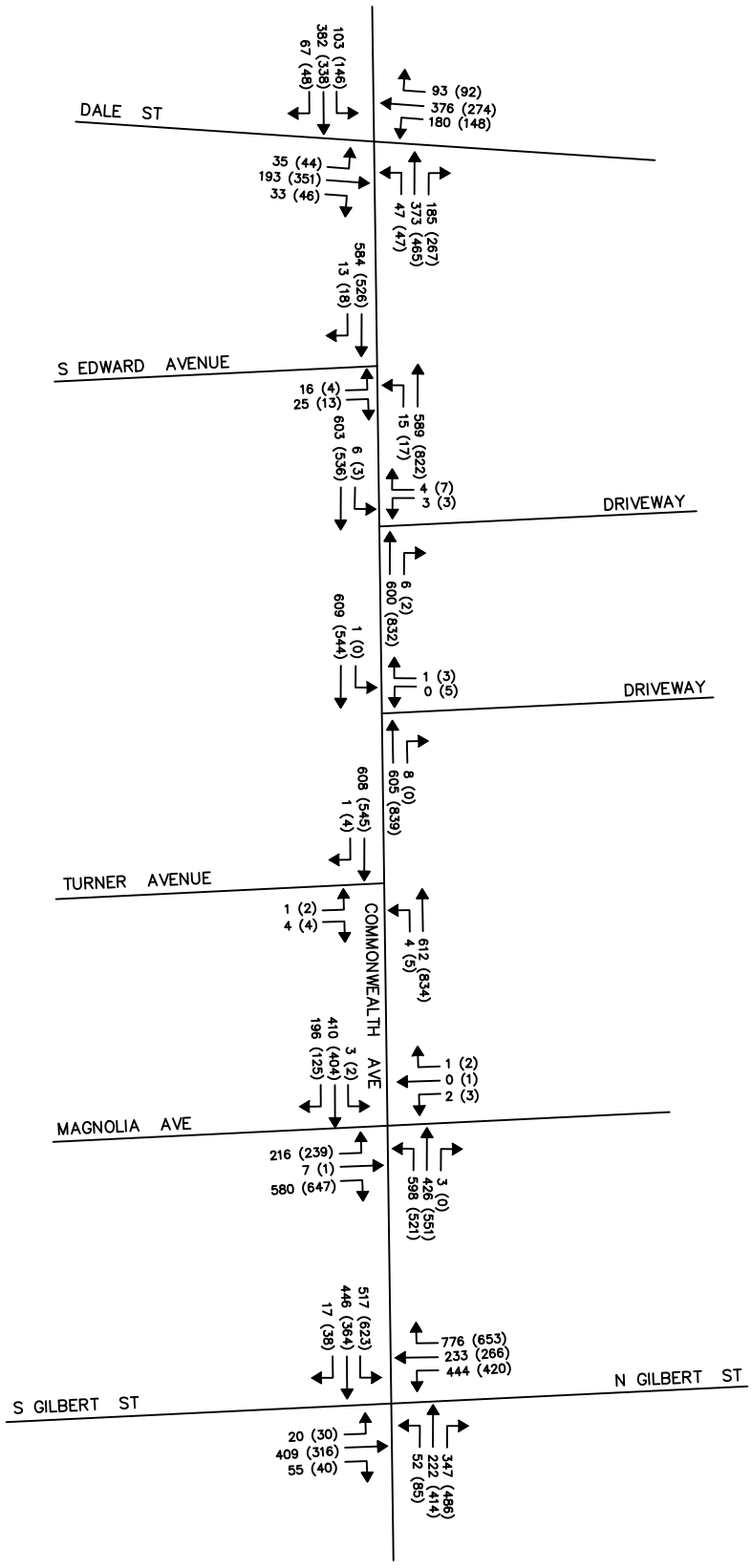
C&S COMPANIES
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

PROJECT NO:	N60.001.006
DATE:	DECEMBER 2019
DRAWN BY:	P. TRAN
DESIGNED BY:	K. WESSEL
CHECKED BY:	K. FABEND

NO ALTERATION PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK EDUCATION LAW

PROJECT LOCATION MAP

FIGURE 1



Jan 30, 2020 – 9:15am
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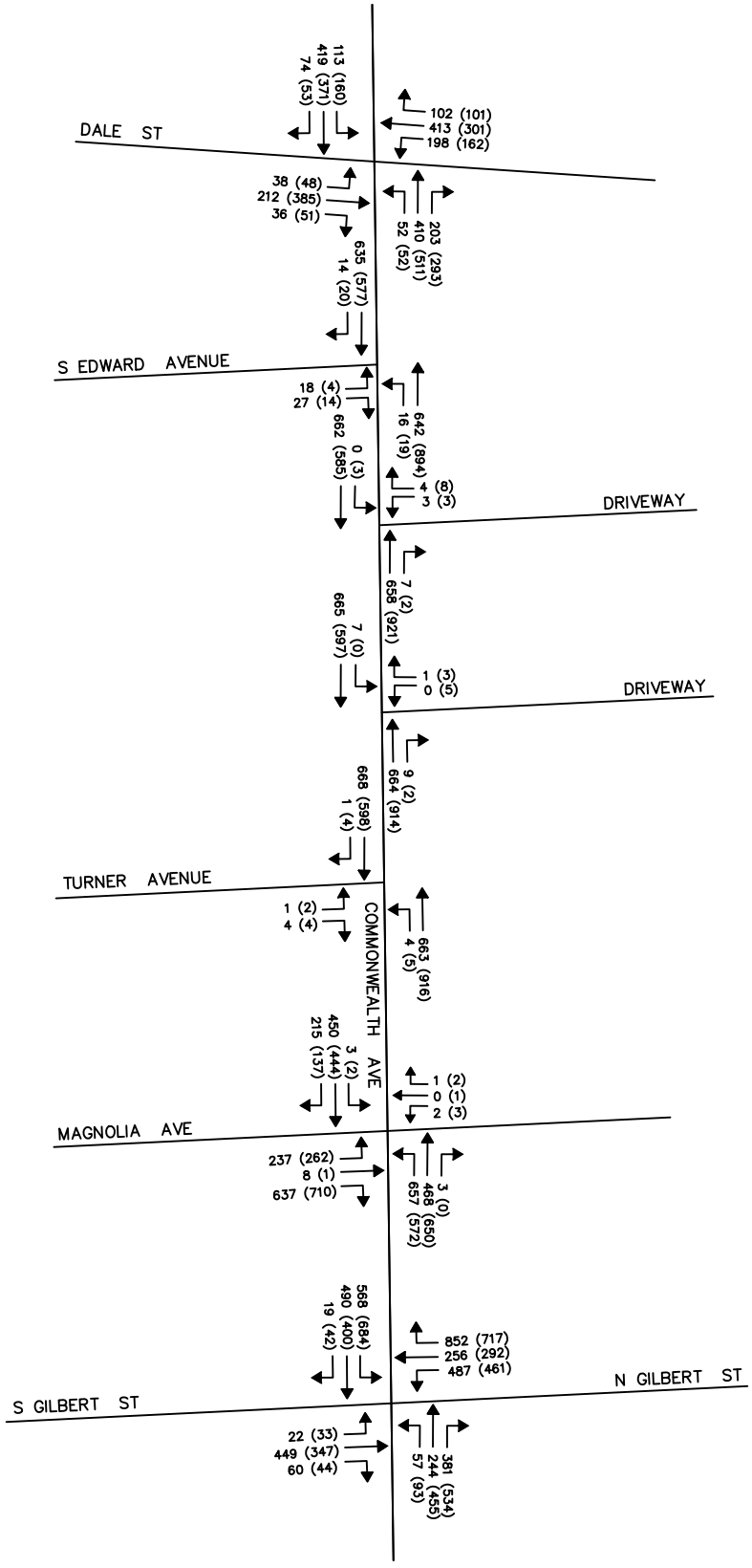
CHECKED BY:	K. FABEND

EXISTING (2019) TRAFFIC VOLUMES

FIGURE 2



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DESIGNED BY:	K. WESSEL
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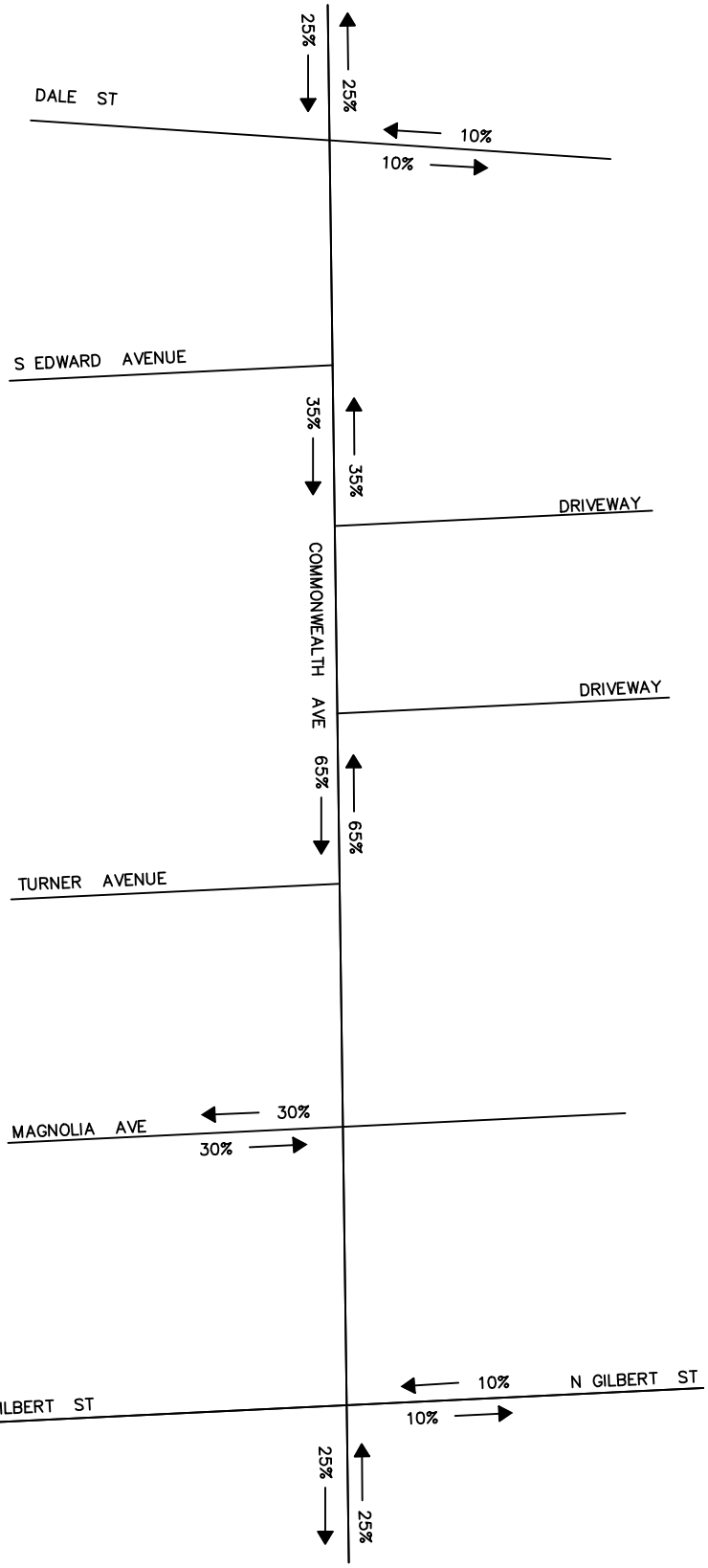
NO BUILD (2022) TRAFFIC VOLUMES

FIGURE 3



Jan 31, 2020 – 11:23am
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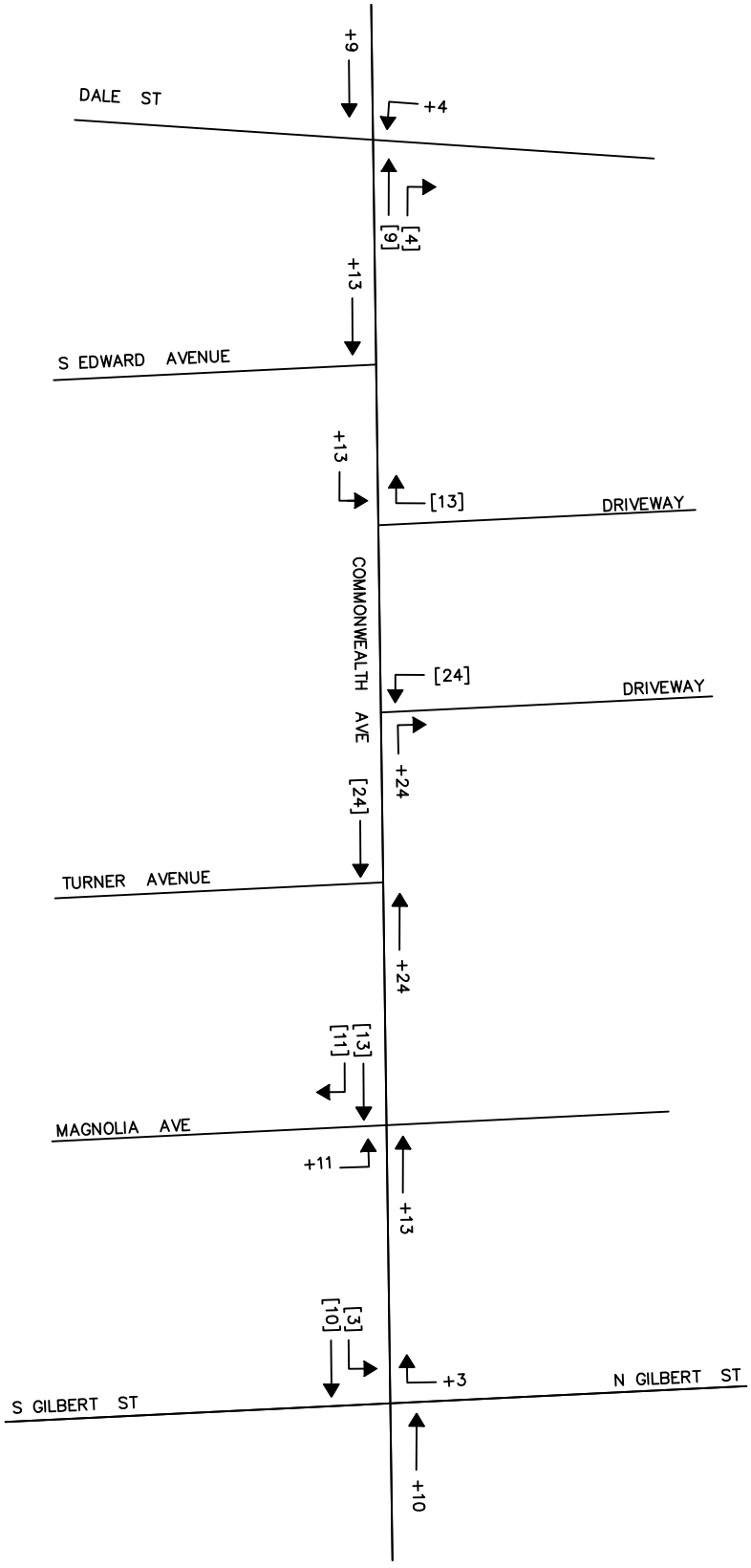
TRIP DISTRIBUTION

FIGURE 4



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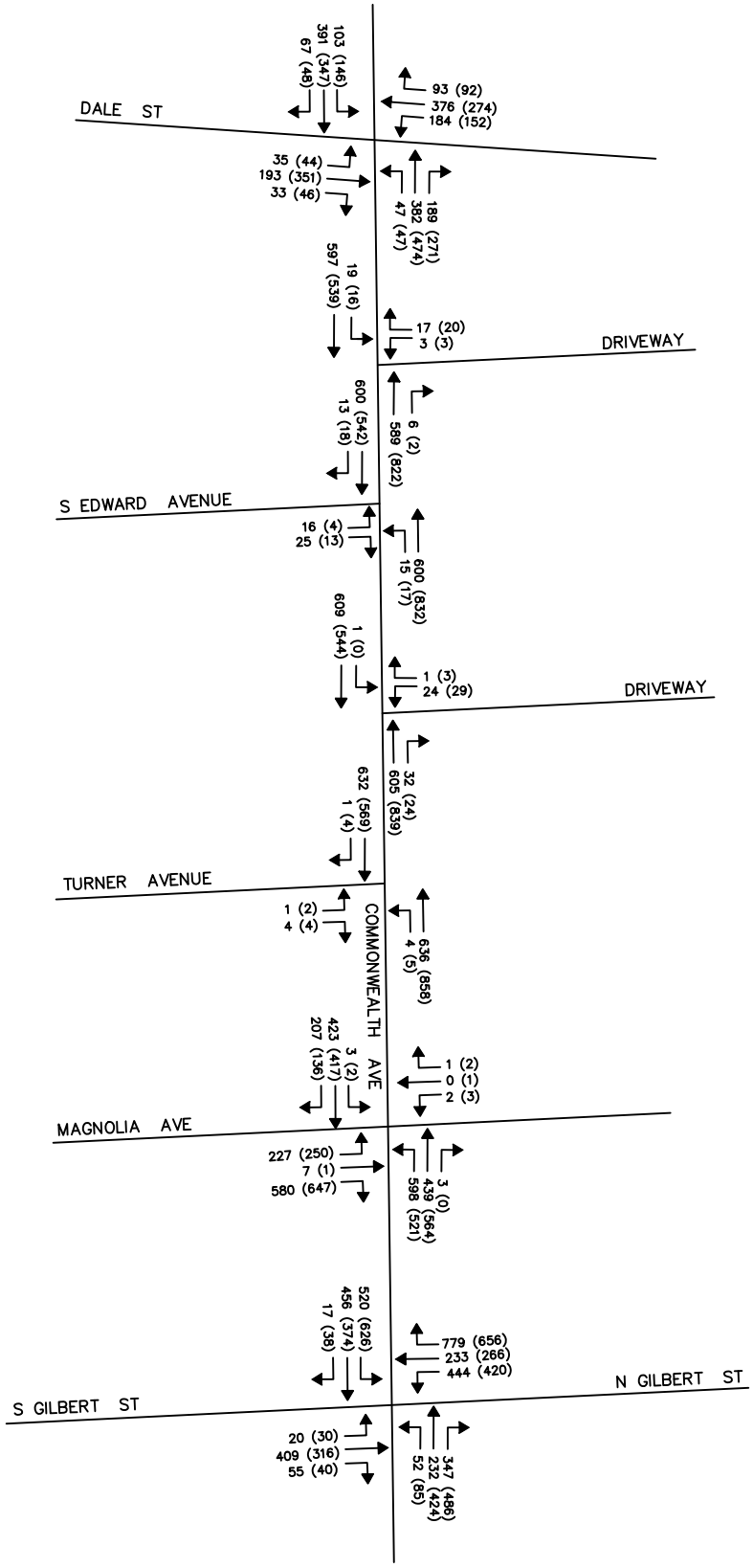
TRIP GENERATION

FIGURE 5



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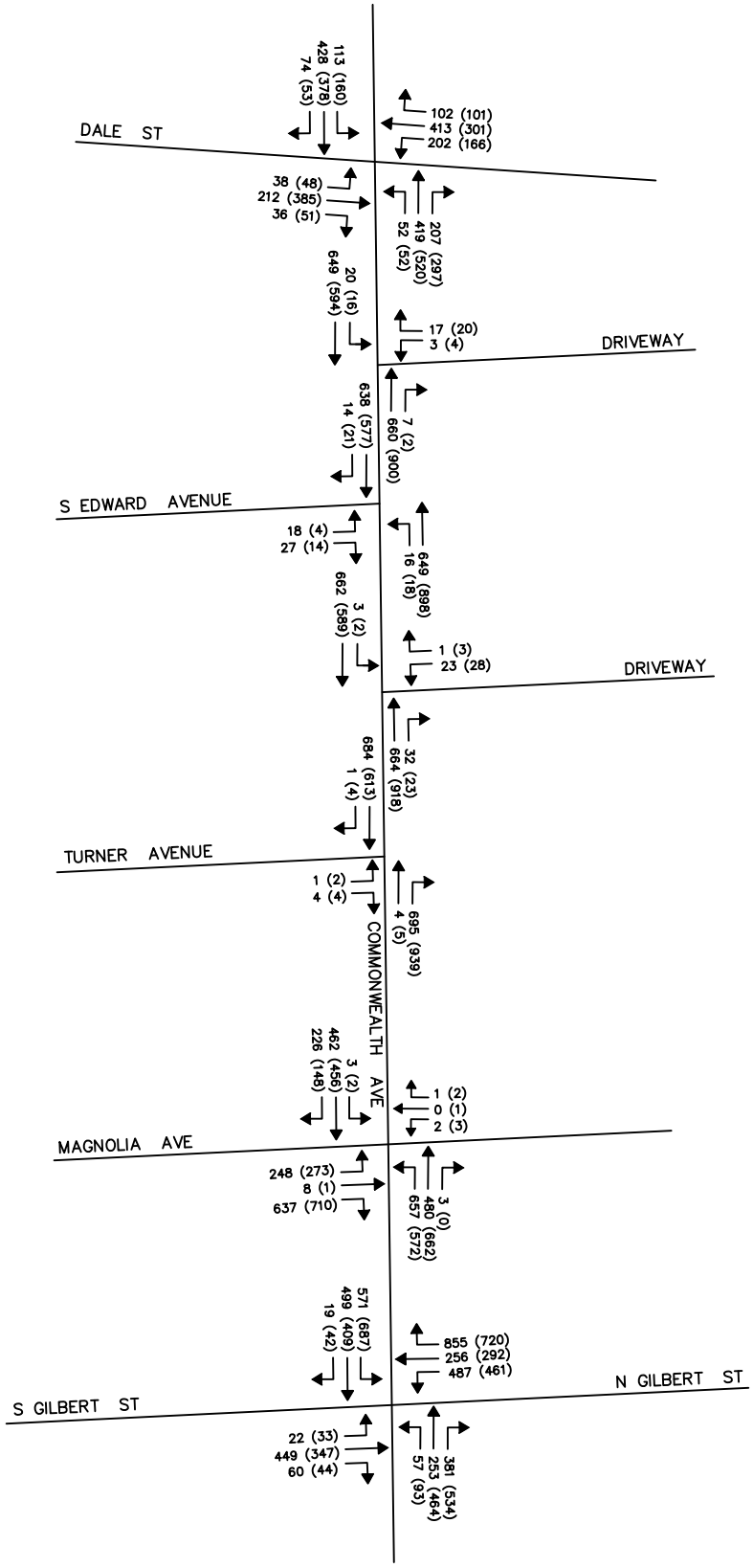
DESIGNED BY:	K. WESSEL
CHECKED BY:	K. FABEND

EXISTING PLUS PROJECT (2019) TRAFFIC VOLUMES

FIGURE 6



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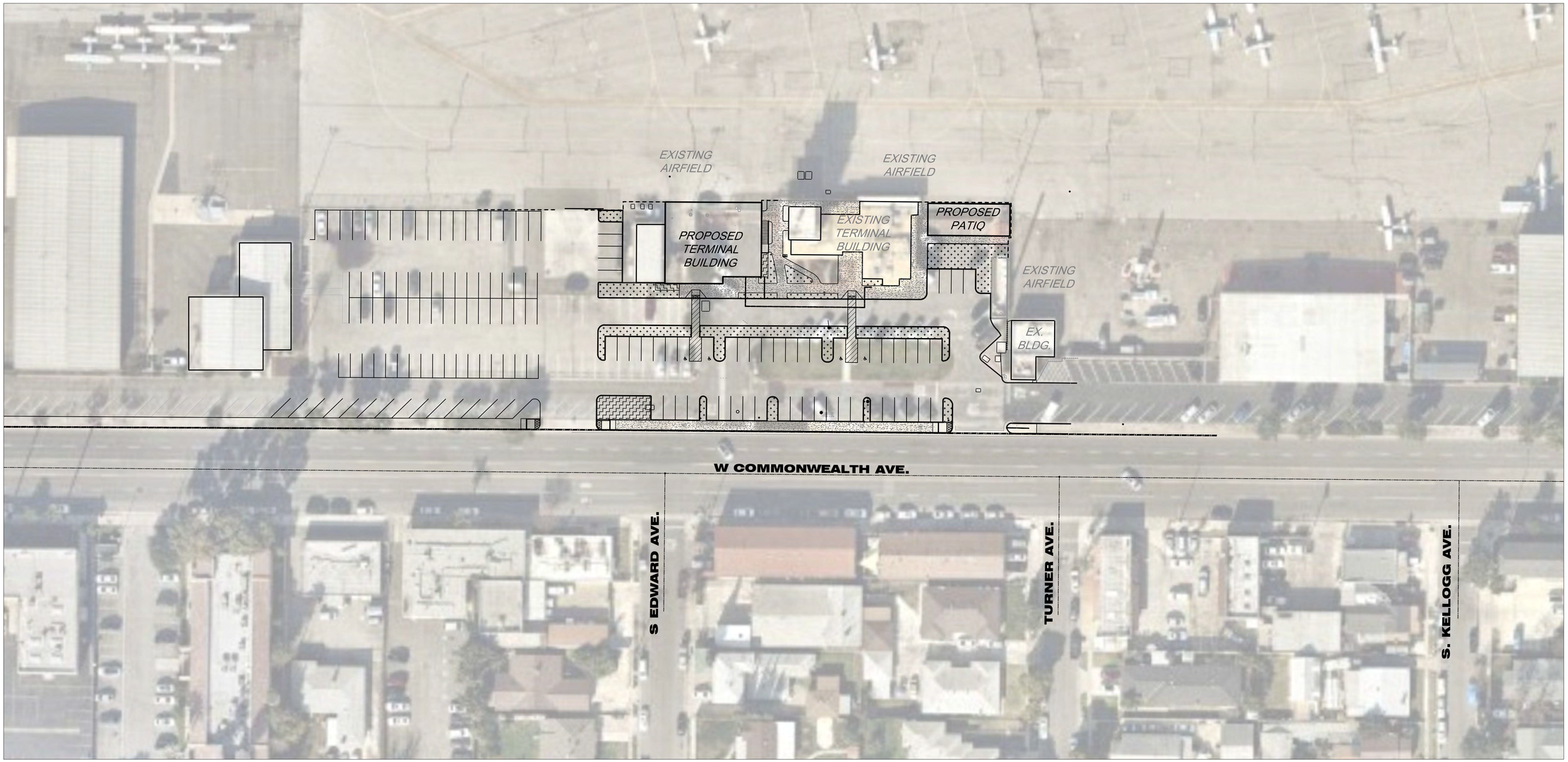
BUILD (2022) TRAFFIC VOLUMES

FIGURE 7



40 0 20 40 80 120

GRAPHIC SCALE

(IN FEET)

1 inch = 40 ft.

C&S COMPANIES

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Fax: 619-296-5683
www.cscos.com

TERMINAL EXPANSION

FULLERTON MUNICIPAL AIRPORT

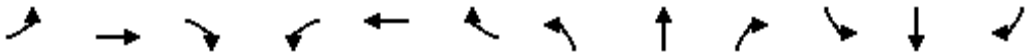
CITY OF FULLERTON, CALIFORNIA

Figure 8

- NOT FOR CONSTRUCTION -

Appendix A

Synchro Reports

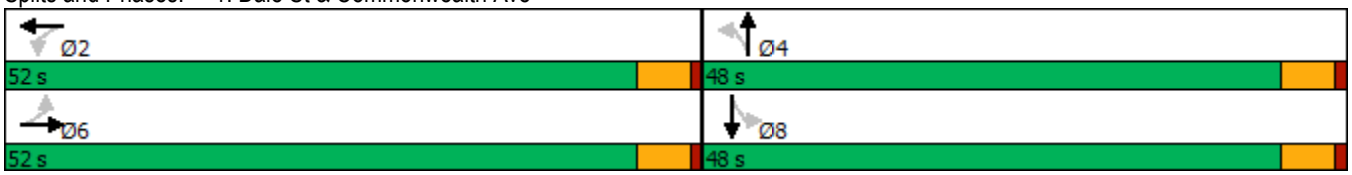


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	382	67	47	373	185	35	193	33	180	376	93
Future Volume (vph)	103	382	67	47	373	185	35	193	33	180	376	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1656	3340	0	1805	3277	0	1703	3385	0	1787	3329	0
Flt Permitted	0.370			0.438			0.320			0.584		
Satd. Flow (perm)	645	3340	0	832	3277	0	574	3385	0	1099	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			116			24			38	
Link Speed (mph)		30			40			40			30	
Link Distance (ft)		844			840			686			583	
Travel Time (s)		19.2			14.3			11.7			13.3	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	6%	4%	0%	4%	6%	6%	4%	6%	1%	4%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	541	0	57	672	0	42	273	0	217	565	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	6	6		1	1		4	4		1	1	
Act Effct Green (s)	47.4	47.4		47.4	47.4		23.3	23.3		23.3	23.3	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.29	0.29		0.29	0.29	
v/c Ratio	0.33	0.27		0.12	0.34		0.25	0.28		0.69	0.57	
Control Delay	14.1	9.5		10.7	8.7		25.0	20.0		36.7	24.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.1	9.5		10.7	8.7		25.0	20.0		36.7	24.5	
LOS	B	A		B	A		C	C		D	C	
Approach Delay		10.3			8.8			20.7			27.9	
Approach LOS		B			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	29	60		12	66		16	50		96	117	
Queue Length 95th (ft)	79	111		36	123		38	71		149	146	
Internal Link Dist (ft)		764			760			606			503	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	378	1971		488	1971		308	1828		590	1805	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.27		0.12	0.34		0.14	0.15		0.37	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 80.8			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 16.7		Intersection LOS: B	
Intersection Capacity Utilization 56.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave

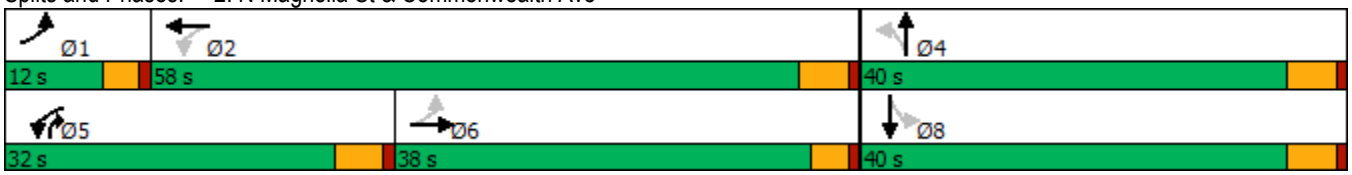


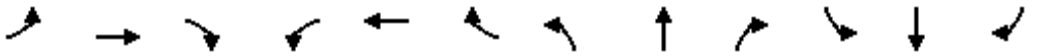
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	410	196	598	426	3	216	7	580	2	0	1
Future Volume (vph)	3	410	196	598	426	3	216	7	580	2	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3283	0	3303	3469	0	0	1778	2733	0	1756	0
Flt Permitted	0.482			0.227				0.731			0.905	
Satd. Flow (perm)	916	3283	0	789	3469	0	0	1363	2733	0	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		75			1				637		109	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			594			591	
Travel Time (s)		9.1			20.9			13.5			13.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	4%	6%	4%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	666	0	657	471	0	0	245	637	0	3	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		6	6		1	1	
Act Effct Green (s)	39.9	34.3		59.0	57.2			35.1	20.7		35.1	
Actuated g/C Ratio	0.38	0.33		0.57	0.55			0.34	0.20		0.34	
v/c Ratio	0.01	0.59		0.69	0.25			0.53	0.60		0.00	
Control Delay	12.0	28.8		16.8	13.0			34.2	5.4		0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.0	28.8		16.8	13.0			34.2	5.4		0.0	
LOS	B	C		B	B			C	A		A	
Approach Delay		28.7			15.2			13.4				
Approach LOS		C			B			B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	171		114	77			130	0		0	
Queue Length 95th (ft)	5	251		153	131			228	48		0	
Internal Link Dist (ft)		454			1148			514			511	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	440	1131		1100	1905			458	1181		624	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.59		0.60	0.25			0.53	0.54		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 104.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 62.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



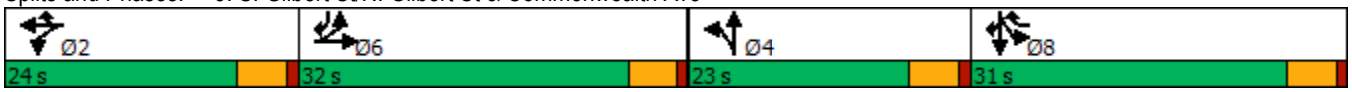


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	517	446	17	52	222	347	20	409	55	444	233	776
Future Volume (vph)	517	446	17	52	222	347	20	409	55	444	233	776
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1564	3268	0	1770	3438	1509	0	3440	0	1665	1736	2733
Flt Permitted	0.950	0.985		0.950				0.998		0.950	0.984	
Satd. Flow (perm)	1564	3268	0	1770	3438	1509	0	3440	0	1665	1736	2733
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				69		11				792
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			728			733			384	
Travel Time (s)		20.9			12.4			16.7			6.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	3%	12%	2%	5%	7%	0%	2%	11%	3%	2%	4%
Shared Lane Traffic (%)	38%									25%		
Lane Group Flow (vph)	327	673	0	53	227	354	0	493	0	340	351	792
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	32.0	32.0		24.0	24.0		23.0	23.0		31.0	31.0	
Total Split (%)	29.1%	29.1%		21.8%	21.8%		20.9%	20.9%		28.2%	28.2%	
Maximum Green (s)	27.0	27.0		19.0	19.0		18.0	18.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	3	3		1	1		4	4		2	2	
Act Effct Green (s)	26.9	26.9		19.0	19.0	50.0		17.6		26.0	26.0	52.9
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.46		0.16		0.24	0.24	0.48
v/c Ratio	0.85	0.84		0.17	0.38	0.49		0.88		0.86	0.85	0.46
Control Delay	61.3	49.8		40.6	42.3	19.2		61.8		62.3	60.5	1.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	61.3	49.8		40.6	42.3	19.2		61.8		62.3	60.5	1.5
LOS	E	D		D	D	B		E		E	E	A
Approach Delay		53.6			29.3			61.8			29.4	
Approach LOS		D			C			E			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	242	248		32	75	136		176		244	250	0
Queue Length 95th (ft)	#413	#342		69	114	220		#265		#412	#416	15
Internal Link Dist (ft)		1148			648			653			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	385	807		306	596	726		575		395	412	1731
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.85	0.83		0.17	0.38	0.49		0.86		0.86	0.85	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 109.5			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 40.5		Intersection LOS: D	
Intersection Capacity Utilization 73.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	584	13	15	589	16	25
Future Vol, veh/h	584	13	15	589	16	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	8	0	4	0	0
Mvmt Flow	596	13	15	601	16	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	609	0	934	305
Stage 1	-	-	-	-	603	-
Stage 2	-	-	-	-	331	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	979	-	268	697
Stage 1	-	-	-	-	515	-
Stage 2	-	-	-	-	706	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	979	-	262	697
Mov Cap-2 Maneuver	-	-	-	-	380	-
Stage 1	-	-	-	-	503	-
Stage 2	-	-	-	-	706	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	526	-	-	979	-
HCM Lane V/C Ratio	0.08	-	-	0.016	-
HCM Control Delay (s)	12.4	-	-	8.7	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	603	600	6	3	4
Future Vol, veh/h	6	603	600	6	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	655	652	7	3	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	659	0	-	0	998	330
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	925	-	-	-	240	666
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	691	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	925	-	-	-	237	666
Mov Cap-2 Maneuver	-	-	-	-	357	-
Stage 1	-	-	-	-	472	-
Stage 2	-	-	-	-	691	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	925	-	-	-	486
HCM Lane V/C Ratio	0.007	-	-	-	0.016
HCM Control Delay (s)	8.9	-	-	-	12.5
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	609	605	8	0	1
Future Vol, veh/h	1	609	605	8	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	662	658	9	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	667	0	-	0	996	334
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	919	-	-	-	241	662
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	698	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	919	-	-	-	241	662
Mov Cap-2 Maneuver	-	-	-	-	360	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	698	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	919	-	-	-	662
HCM Lane V/C Ratio	0.001	-	-	-	0.002
HCM Control Delay (s)	8.9	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

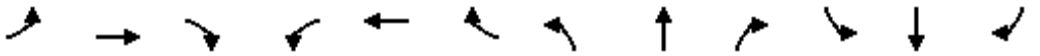
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	608	1	4	612	1	4
Future Vol, veh/h	608	1	4	612	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	0	25	4	0	25
Mvmt Flow	620	1	4	624	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	621	0	941	311
Stage 1	-	-	-	-	621	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	-	-	4.6	-	6.8	7.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.45	-	3.5	3.55
Pot Cap-1 Maneuver	-	-	815	-	265	621
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	715	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	815	-	263	621
Mov Cap-2 Maneuver	-	-	-	-	382	-
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	715	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	552	-	-	815	-
HCM Lane V/C Ratio	0.009	-	-	0.005	-
HCM Control Delay (s)	11.6	-	-	9.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

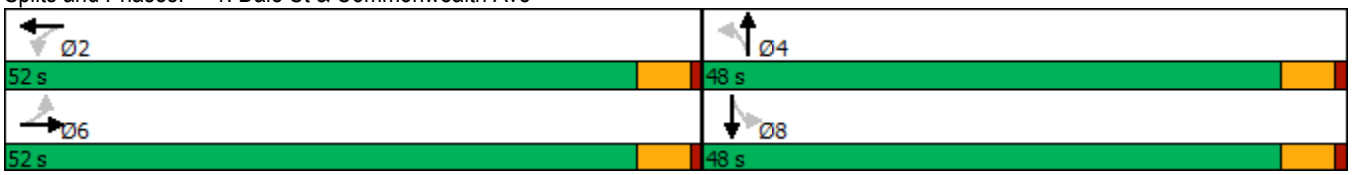


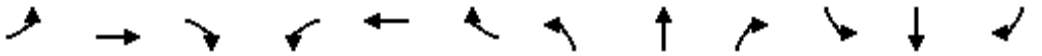
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	338	48	47	465	267	44	351	46	148	274	92
Future Volume (vph)	146	338	48	47	465	267	44	351	46	148	274	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1787	3472	0	1770	3324	0	1805	3518	0	1805	3363	0
Flt Permitted	0.329			0.511			0.458			0.425		
Satd. Flow (perm)	619	3472	0	952	3324	0	870	3518	0	808	3363	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			153			18			58	
Link Speed (mph)		40			40			40			30	
Link Distance (ft)		1109			840			493			392	
Travel Time (s)		18.9			14.3			8.4			8.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	2%	3%	2%	0%	1%	0%	0%	3%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	411	0	50	779	0	47	422	0	157	389	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		5	5		0	0	
Act Effct Green (s)	47.4	47.4		47.4	47.4		19.4	19.4		19.4	19.4	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.25	0.25		0.25	0.25	
v/c Ratio	0.41	0.19		0.09	0.37		0.21	0.47		0.77	0.44	
Control Delay	14.1	7.6		8.8	7.4		23.8	24.3		51.1	21.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.1	7.6		8.8	7.4		23.8	24.3		51.1	21.1	
LOS	B	A		A	A		C	C		D	C	
Approach Delay		9.4			7.5			24.2			29.7	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	33	37		9	65		18	85		69	68	
Queue Length 95th (ft)	110	84		32	145		43	123		135	104	
Internal Link Dist (ft)		1029			760			413			312	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	381	2149		587	2109		491	1993		455	1923	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.41	0.19		0.09	0.37		0.10	0.21		0.35	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 76.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 65.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave



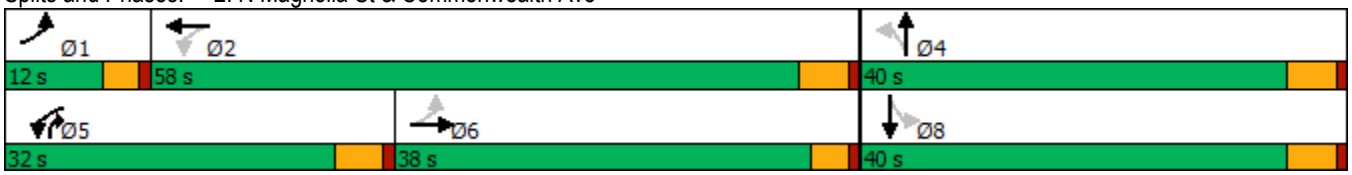


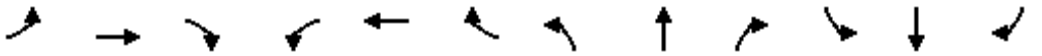
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	404	125	521	551	0	239	1	647	3	1	2
Future Volume (vph)	2	404	125	521	551	0	239	1	647	3	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3441	0	3367	3539	0	0	1775	2787	0	1771	0
Flt Permitted	0.428			0.291				0.723			0.911	
Satd. Flow (perm)	813	3441	0	1031	3539	0	0	1347	2787	0	1653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38							696		2	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			584			346	
Travel Time (s)		9.1			20.9			13.3			7.9	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	2%	4%	2%	0%	2%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	568	0	560	592	0	0	258	696	0	6	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		1	1		3	3	
Act Effct Green (s)	40.5	34.9		56.4	54.6			35.0	17.5		35.0	
Actuated g/C Ratio	0.40	0.34		0.56	0.54			0.34	0.17		0.34	
v/c Ratio	0.01	0.47		0.57	0.31			0.55	0.66		0.01	
Control Delay	11.5	26.2		14.4	13.9			33.2	6.1		20.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	11.5	26.2		14.4	13.9			33.2	6.1		20.5	
LOS	B	C		B	B			C	A		C	
Approach Delay		26.2			14.2			13.5			20.5	
Approach LOS		C			B			B			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	140		93	101			133	0		2	
Queue Length 95th (ft)	4	205		124	166			236	51		11	
Internal Link Dist (ft)		454			1148			504			266	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	422	1209		1195	1903			465	1253		572	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.00	0.47		0.47	0.31			0.55	0.56		0.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 101.5			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 16.5		Intersection LOS: B	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave





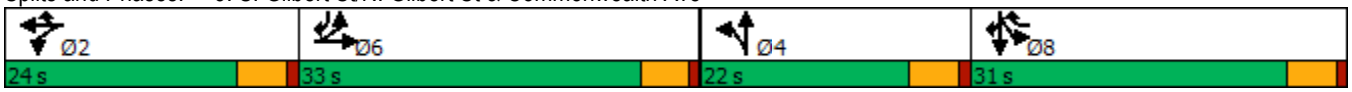
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	623	364	38	85	414	486	30	316	40	420	266	653
Future Volume (vph)	623	364	38	85	414	486	30	316	40	420	266	653
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1626	3296	0	1805	3505	1568	0	3509	0	1649	1766	2760
Flt Permitted	0.950	0.980		0.950				0.996		0.950	0.988	
Satd. Flow (perm)	1626	3296	0	1805	3505	1568	0	3509	0	1649	1766	2760
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				69		10				680
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1228			1204			463			384	
Travel Time (s)		20.9			20.5			7.9			6.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	3%	0%	0%	3%	3%	0%	1%	0%	4%	0%	3%
Shared Lane Traffic (%)	46%									20%		
Lane Group Flow (vph)	350	718	0	89	431	506	0	402	0	350	365	680
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	33.0	33.0		24.0	24.0		22.0	22.0		31.0	31.0	
Total Split (%)	30.0%	30.0%		21.8%	21.8%		20.0%	20.0%		28.2%	28.2%	
Maximum Green (s)	28.0	28.0		19.0	19.0		17.0	17.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	10	10		10	10		8	8		4	4	
Act Effct Green (s)	27.6	27.6		19.0	19.0	50.0		16.0		26.0	26.0	53.6
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.46		0.15		0.24	0.24	0.49
v/c Ratio	0.85	0.85		0.28	0.70	0.67		0.77		0.89	0.86	0.40
Control Delay	58.8	49.7		42.4	49.5	25.0		53.9		65.7	61.3	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	58.8	49.7		42.4	49.5	25.0		53.9		65.7	61.3	1.3
LOS	E	D		D	D	C		D		E	E	A
Approach Delay		52.7			36.8			53.9			33.2	
Approach LOS		D			D			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	258	264		55	152	238		140		253	262	0
Queue Length 95th (ft)	#437	#370		104	211	369		194		#437	#443	14
Internal Link Dist (ft)		1148			1124			383			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	419	853		315	613	759		564		394	422	1714
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.84	0.84		0.28	0.70	0.67		0.71		0.89	0.86	0.40

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 108.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 41.6		Intersection LOS: D	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	526	18	17	822	4	13
Future Vol, veh/h	526	18	17	822	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	560	19	18	874	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	579	0	1043	290
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	473	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1005	-	228	713
Stage 1	-	-	-	-	535	-
Stage 2	-	-	-	-	599	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	220	713
Mov Cap-2 Maneuver	-	-	-	-	349	-
Stage 1	-	-	-	-	516	-
Stage 2	-	-	-	-	599	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	573	-	-	1005	-
HCM Lane V/C Ratio	0.032	-	-	0.018	-
HCM Control Delay (s)	11.5	-	-	8.6	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	545	4	5	834	2	4
Future Vol, veh/h	545	4	5	834	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	50	0
Mvmt Flow	568	4	5	869	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	572	0	1015	286
Stage 1	-	-	-	-	570	-
Stage 2	-	-	-	-	445	-
Critical Hdwy	-	-	4.1	-	7.8	6.9
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	-	-	2.2	-	4	3.3
Pot Cap-1 Maneuver	-	-	1011	-	166	717
Stage 1	-	-	-	-	414	-
Stage 2	-	-	-	-	492	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1011	-	164	717
Mov Cap-2 Maneuver	-	-	-	-	277	-
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	492	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	469	-	-	1011	-
HCM Lane V/C Ratio	0.013	-	-	0.005	-
HCM Control Delay (s)	12.8	-	-	8.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	544	839	0	5	3
Future Vol, veh/h	0	544	839	0	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	591	912	0	5	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1208	456
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	296	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	-	176	551
Stage 1	0	-	-	-	352	-
Stage 2	0	-	-	-	729	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	176	551
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	352	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	346
HCM Lane V/C Ratio	-	-	-	0.025
HCM Control Delay (s)	-	-	-	15.7
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

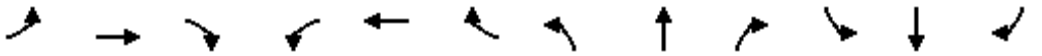
Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	536	832	2	3	7
Future Vol, veh/h	3	536	832	2	3	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	583	904	2	3	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	906	0	-	0	1203	453
Stage 1	-	-	-	-	905	-
Stage 2	-	-	-	-	298	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	747	-	-	-	177	554
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	727	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	747	-	-	-	176	554
Mov Cap-2 Maneuver	-	-	-	-	283	-
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	727	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	747	-	-	-	430
HCM Lane V/C Ratio	0.004	-	-	-	0.025
HCM Control Delay (s)	9.8	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

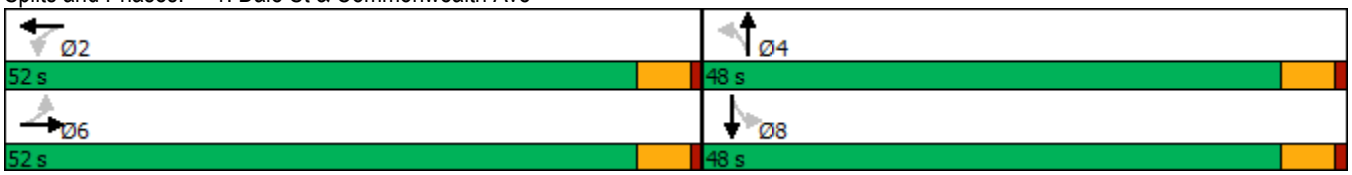


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	103	391	67	47	382	189	35	193	33	184	376	93
Future Volume (vph)	103	391	67	47	382	189	35	193	33	184	376	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1656	3340	0	1805	3277	0	1703	3385	0	1787	3329	0
Flt Permitted	0.361			0.432			0.321			0.584		
Satd. Flow (perm)	629	3340	0	821	3277	0	575	3385	0	1099	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			116			24			38	
Link Speed (mph)		30			40			40			30	
Link Distance (ft)		844			840			686			583	
Travel Time (s)		19.2			14.3			11.7			13.3	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	6%	4%	0%	4%	6%	6%	4%	6%	1%	4%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	552	0	57	688	0	42	273	0	222	565	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	6	6		1	1		4	4		1	1	
Act Effct Green (s)	47.5	47.5		47.5	47.5		23.7	23.7		23.7	23.7	
Actuated g/C Ratio	0.58	0.58		0.58	0.58		0.29	0.29		0.29	0.29	
v/c Ratio	0.34	0.28		0.12	0.35		0.25	0.27		0.69	0.57	
Control Delay	14.6	9.7		10.9	8.9		24.8	19.9		36.9	24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.6	9.7		10.9	8.9		24.8	19.9		36.9	24.3	
LOS	B	A		B	A		C	B		D	C	
Approach Delay		10.6			9.1			20.6			27.9	
Approach LOS		B			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	30	62		12	70		16	50		99	117	
Queue Length 95th (ft)	81	116		36	130		38	71		153	146	
Internal Link Dist (ft)		764			760			606			503	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	367	1962		479	1963		307	1820		587	1797	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.34	0.28		0.12	0.35		0.14	0.15		0.38	0.31	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 81.2			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave

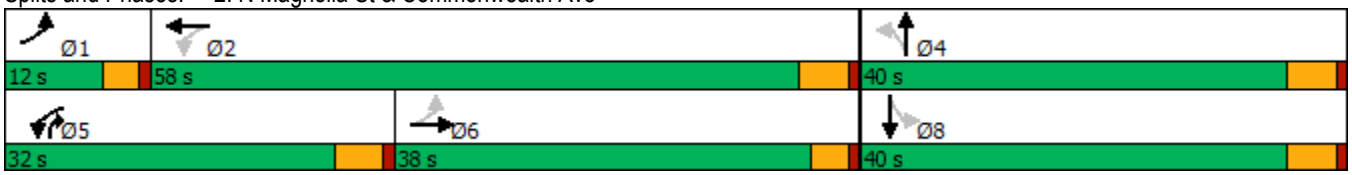


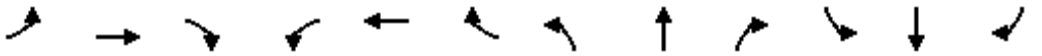
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	423	207	598	439	3	227	7	580	2	0	1
Future Volume (vph)	3	423	207	598	439	3	227	7	580	2	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3280	0	3303	3469	0	0	1778	2733	0	1756	0
Flt Permitted	0.476			0.213				0.731			0.903	
Satd. Flow (perm)	904	3280	0	741	3469	0	0	1362	2733	0	1638	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		78			1				637		109	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			594			591	
Travel Time (s)		9.1			20.9			13.5			13.4	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	4%	6%	4%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	692	0	657	485	0	0	257	637	0	3	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		6	6		1	1	
Act Effct Green (s)	39.9	34.3		59.3	57.4			35.1	21.0		35.1	
Actuated g/C Ratio	0.38	0.33		0.57	0.55			0.34	0.20		0.34	
v/c Ratio	0.01	0.61		0.70	0.25			0.56	0.60		0.00	
Control Delay	12.0	29.4		17.4	13.0			35.2	5.3		0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.0	29.4		17.4	13.0			35.2	5.3		0.0	
LOS	B	C		B	B			D	A		A	
Approach Delay		29.3			15.5			13.9				
Approach LOS		C			B			B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	180		114	80			139	0		0	
Queue Length 95th (ft)	5	262		161	135			241	48		0	
Internal Link Dist (ft)		454			1148			514			511	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	435	1129		1084	1909			457	1180		622	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.61		0.61	0.25			0.56	0.54		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 104.4			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 18.5		Intersection LOS: B	
Intersection Capacity Utilization 64.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave





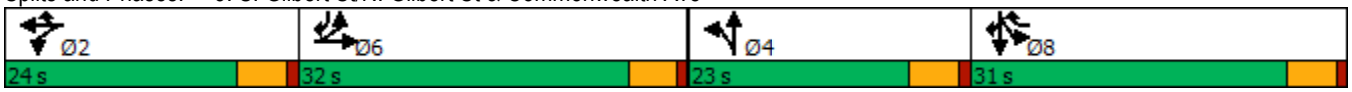
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	520	456	17	52	232	347	20	409	55	444	233	779
Future Volume (vph)	520	456	17	52	232	347	20	409	55	444	233	779
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1564	3268	0	1770	3438	1509	0	3440	0	1665	1736	2733
Flt Permitted	0.950	0.985		0.950				0.998		0.950	0.984	
Satd. Flow (perm)	1564	3268	0	1770	3438	1509	0	3440	0	1665	1736	2733
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				69		11				795
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			728			733			384	
Travel Time (s)		20.9			12.4			16.7			6.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	3%	12%	2%	5%	7%	0%	2%	11%	3%	2%	4%
Shared Lane Traffic (%)	38%									25%		
Lane Group Flow (vph)	329	684	0	53	237	354	0	493	0	340	351	795
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	32.0	32.0		24.0	24.0		23.0	23.0		31.0	31.0	
Total Split (%)	29.1%	29.1%		21.8%	21.8%		20.9%	20.9%		28.2%	28.2%	
Maximum Green (s)	27.0	27.0		19.0	19.0		18.0	18.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	3	3		1	1		4	4		2	2	
Act Effct Green (s)	27.0	27.0		19.0	19.0	50.0		17.6		26.0	26.0	53.0
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.46		0.16		0.24	0.24	0.48
v/c Ratio	0.86	0.85		0.17	0.40	0.49		0.88		0.86	0.85	0.46
Control Delay	61.7	50.7		40.6	42.6	19.2		61.9		62.4	60.6	1.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	61.7	50.7		40.6	42.6	19.2		61.9		62.4	60.6	1.5
LOS	E	D		D	D	B		E		E	E	A
Approach Delay		54.3			29.6			61.9			29.4	
Approach LOS		D			C			E			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	245	253		32	78	136		176		244	250	0
Queue Length 95th (ft)	#417	#352		69	118	220		#265		#412	#416	15
Internal Link Dist (ft)		1148			648			653			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	385	806		306	595	726		574		395	412	1732
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.85	0.85		0.17	0.40	0.49		0.86		0.86	0.85	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 109.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 40.8		Intersection LOS: D	
Intersection Capacity Utilization 74.0%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	593	13	15	602	16	25
Future Vol, veh/h	593	13	15	602	16	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	8	0	4	0	0
Mvmt Flow	605	13	15	614	16	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	618	0	949	309
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	337	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	972	-	262	693
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	701	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	972	-	256	693
Mov Cap-2 Maneuver	-	-	-	-	375	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	701	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	12.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	521	-	-	972	-
HCM Lane V/C Ratio	0.08	-	-	0.016	-
HCM Control Delay (s)	12.5	-	-	8.8	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	603	600	6	3	17
Future Vol, veh/h	19	603	600	6	3	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	21	655	652	7	3	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	659	0	-	0	1026	330
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	370	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	925	-	-	-	231	666
Stage 1	-	-	-	-	478	-
Stage 2	-	-	-	-	669	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	925	-	-	-	223	666
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	461	-
Stage 2	-	-	-	-	669	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	925	-	-	-	584
HCM Lane V/C Ratio	0.022	-	-	-	0.037
HCM Control Delay (s)	9	-	-	-	11.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	609	605	32	1	24
Future Vol, veh/h	1	609	605	32	1	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	662	658	35	1	26

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	693	0	-	0	1009	347
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	898	-	-	-	237	649
Stage 1	-	-	-	-	467	-
Stage 2	-	-	-	-	698	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	898	-	-	-	237	649
Mov Cap-2 Maneuver	-	-	-	-	356	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	698	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	898	-	-	-	628
HCM Lane V/C Ratio	0.001	-	-	-	0.043
HCM Control Delay (s)	9	0	-	-	11
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	632	1	4	636	1	4
Future Vol, veh/h	632	1	4	636	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	0	25	4	0	25
Mvmt Flow	645	1	4	649	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	646	0	979	323
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	4.6	-	6.8	7.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.45	-	3.5	3.55
Pot Cap-1 Maneuver	-	-	795	-	251	610
Stage 1	-	-	-	-	489	-
Stage 2	-	-	-	-	704	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	795	-	249	610
Mov Cap-2 Maneuver	-	-	-	-	369	-
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	704	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	540	-	-	795	-
HCM Lane V/C Ratio	0.009	-	-	0.005	-
HCM Control Delay (s)	11.7	-	-	9.6	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

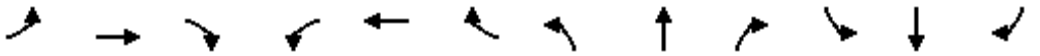
Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	544	839	24	29	3
Future Vol, veh/h	0	544	839	24	29	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	591	912	26	32	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1221	469
Stage 1	-	-	-	-	925	-
Stage 2	-	-	-	-	296	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	-	172	541
Stage 1	0	-	-	-	347	-
Stage 2	0	-	-	-	729	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	172	541
Mov Cap-2 Maneuver	-	-	-	-	279	-
Stage 1	-	-	-	-	347	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	292
HCM Lane V/C Ratio	-	-	-	0.119
HCM Control Delay (s)	-	-	-	19
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.4

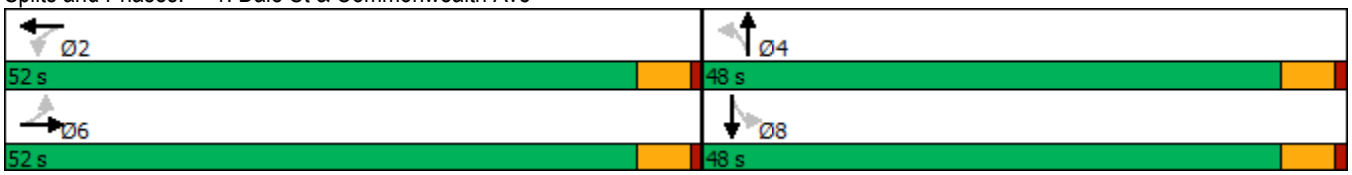


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	347	48	47	474	271	44	351	46	152	274	92
Future Volume (vph)	146	347	48	47	474	271	44	351	46	152	274	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1787	3476	0	1770	3324	0	1805	3518	0	1805	3363	0
Flt Permitted	0.323			0.506			0.459			0.427		
Satd. Flow (perm)	608	3476	0	943	3324	0	872	3518	0	811	3363	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		20			152			18			58	
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		166			690			223			215	
Travel Time (s)		3.8			11.8			5.1			4.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	2%	3%	2%	0%	1%	0%	0%	3%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	420	0	50	792	0	47	422	0	162	389	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		5	5		0	0	
Act Effct Green (s)	47.5	47.5		47.5	47.5		19.8	19.8		19.8	19.8	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.42	0.20		0.09	0.38		0.21	0.46		0.78	0.43	
Control Delay	14.8	7.8		9.1	7.7		23.6	24.1		51.3	20.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	14.8	7.8		9.1	7.7		23.6	24.1		51.3	20.9	
LOS	B	A		A	A		C	C		D	C	
Approach Delay		9.7			7.7			24.0			29.9	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	34	38		9	68		18	85		72	68	
Queue Length 95th (ft)	114	88		33	152		43	123		139	104	
Internal Link Dist (ft)		86			610			143			135	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	372	2139		578	2097		489	1981		455	1912	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.42	0.20		0.09	0.38		0.10	0.21		0.36	0.20	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 77.4			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave

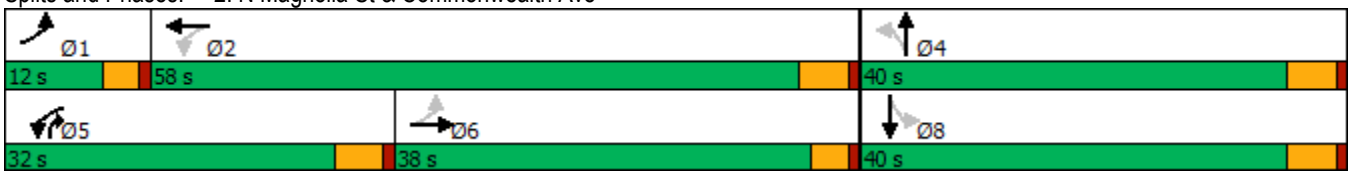


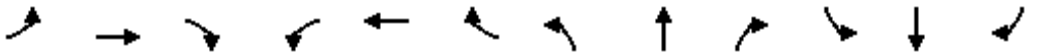
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	417	136	521	564	0	250	1	647	3	1	2
Future Volume (vph)	2	417	136	521	564	0	250	1	647	3	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3434	0	3367	3539	0	0	1775	2787	0	1771	0
Flt Permitted	0.423			0.276				0.723			0.909	
Satd. Flow (perm)	804	3434	0	978	3539	0	0	1347	2787	0	1649	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41							696		2	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			131			110	
Travel Time (s)		9.1			20.9			3.0			2.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	2%	4%	2%	0%	2%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	594	0	560	606	0	0	270	696	0	6	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		1	1		3	3	
Act Effct Green (s)	40.5	34.9		56.4	54.6			35.0	17.5		35.0	
Actuated g/C Ratio	0.40	0.34		0.56	0.54			0.34	0.17		0.34	
v/c Ratio	0.01	0.49		0.59	0.32			0.58	0.66		0.01	
Control Delay	11.5	26.5		14.6	14.0			34.0	6.1		20.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	11.5	26.5		14.6	14.0			34.0	6.1		20.5	
LOS	B	C		B	B			C	A		C	
Approach Delay		26.5			14.3			13.9			20.5	
Approach LOS		C			B			B			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	147		93	104			141	0		2	
Queue Length 95th (ft)	4	215		124	171			248	51		11	
Internal Link Dist (ft)		454			1148			51			30	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	419	1208		1180	1903			465	1253		570	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.00	0.49		0.47	0.32			0.58	0.56		0.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 101.5			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 16.8		Intersection LOS: B	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



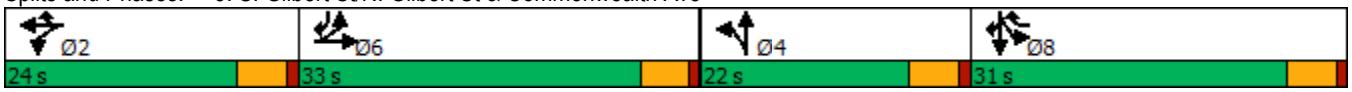


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	626	374	38	85	424	486	30	316	40	420	266	656
Future Volume (vph)	626	374	38	85	424	486	30	316	40	420	266	656
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1626	3295	0	1805	3505	1568	0	3509	0	1649	1766	2760
Flt Permitted	0.950	0.980		0.950				0.996		0.950	0.988	
Satd. Flow (perm)	1626	3295	0	1805	3505	1568	0	3509	0	1649	1766	2760
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				69		10				683
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			409			255			384	
Travel Time (s)		20.9			7.0			5.8			6.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	3%	0%	0%	3%	3%	0%	1%	0%	4%	0%	3%
Shared Lane Traffic (%)	45%									20%		
Lane Group Flow (vph)	359	723	0	89	442	506	0	402	0	350	365	683
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	33.0	33.0		24.0	24.0		22.0	22.0		31.0	31.0	
Total Split (%)	30.0%	30.0%		21.8%	21.8%		20.0%	20.0%		28.2%	28.2%	
Maximum Green (s)	28.0	28.0		19.0	19.0		17.0	17.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	10	10		10	10		8	8		4	4	
Act Effct Green (s)	27.7	27.7		19.0	19.0	50.0		16.0		26.0	26.0	53.7
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.46		0.15		0.24	0.24	0.49
v/c Ratio	0.87	0.86		0.28	0.72	0.67		0.77		0.89	0.86	0.40
Control Delay	61.3	50.2		42.4	50.3	25.1		53.9		65.8	61.4	1.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	61.3	50.2		42.4	50.3	25.1		53.9		65.8	61.4	1.3
LOS	E	D		D	D	C		D		E	E	A
Approach Delay		53.9			37.3			53.9			33.1	
Approach LOS		D			D			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	267	266		55	157	238		140		253	262	0
Queue Length 95th (ft)	#453	#375		104	216	369		194		#437	#443	14
Internal Link Dist (ft)		1148			329			175			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	419	853		315	612	759		563		394	422	1715
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.86	0.85		0.28	0.72	0.67		0.71		0.89	0.86	0.40

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 108.7			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay: 42.1		Intersection LOS: D	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	539	822	2	3	20
Future Vol, veh/h	16	539	822	2	3	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	586	893	2	3	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	895	0	-	0	1221	448
Stage 1	-	-	-	-	894	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	754	-	-	-	172	558
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	703	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	754	-	-	-	166	558
Mov Cap-2 Maneuver	-	-	-	-	275	-
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	703	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	754	-	-	-	492
HCM Lane V/C Ratio	0.023	-	-	-	0.051
HCM Control Delay (s)	9.9	-	-	-	12.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	542	18	17	832	4	13
Future Vol, veh/h	542	18	17	832	4	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	577	19	18	885	4	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	596	0	1066	298
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	479	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	990	-	221	704
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	595	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	990	-	213	704
Mov Cap-2 Maneuver	-	-	-	-	342	-
Stage 1	-	-	-	-	505	-
Stage 2	-	-	-	-	595	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	564	-	-	990	-
HCM Lane V/C Ratio	0.032	-	-	0.018	-
HCM Control Delay (s)	11.6	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

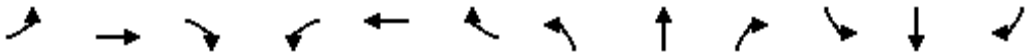
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	569	4	5	858	2	4
Future Vol, veh/h	569	4	5	858	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	50	0
Mvmt Flow	593	4	5	894	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	597	0	1052	299
Stage 1	-	-	-	-	595	-
Stage 2	-	-	-	-	457	-
Critical Hdwy	-	-	4.1	-	7.8	6.9
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	-	-	2.2	-	4	3.3
Pot Cap-1 Maneuver	-	-	989	-	156	703
Stage 1	-	-	-	-	400	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	989	-	154	703
Mov Cap-2 Maneuver	-	-	-	-	267	-
Stage 1	-	-	-	-	396	-
Stage 2	-	-	-	-	484	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	455	-	-	989	-
HCM Lane V/C Ratio	0.014	-	-	0.005	-
HCM Control Delay (s)	13	-	-	8.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

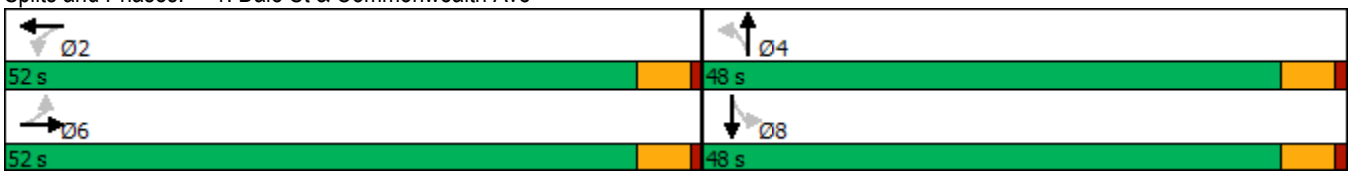


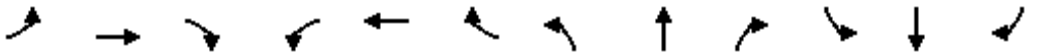
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	419	74	52	410	203	38	212	36	198	413	102
Future Volume (vph)	113	419	74	52	410	203	38	212	36	198	413	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1656	3340	0	1805	3277	0	1703	3385	0	1787	3329	0
Flt Permitted	0.332			0.404			0.293			0.559		
Satd. Flow (perm)	579	3340	0	768	3277	0	525	3385	0	1052	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			116			24			38	
Link Speed (mph)		30			40			40			30	
Link Distance (ft)		166			840			223			215	
Travel Time (s)		3.8			14.3			3.8			4.9	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	6%	4%	0%	4%	6%	6%	4%	6%	1%	4%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	594	0	63	739	0	46	298	0	239	621	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	6	6		1	1		4	4		0	0	
Act Effct Green (s)	47.6	47.6		47.6	47.6		26.3	26.3		26.3	26.3	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.31	0.31		0.31	0.31	
v/c Ratio	0.41	0.31		0.14	0.39		0.28	0.28		0.73	0.58	
Control Delay	18.7	11.3		12.9	10.5		25.0	19.5		38.4	24.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	18.7	11.3		12.9	10.5		25.0	19.5		38.4	24.2	
LOS	B	B		B	B		C	B		D	C	
Approach Delay		12.6			10.7			20.3			28.1	
Approach LOS		B			B			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	37	74		14	84		18	55		109	132	
Queue Length 95th (ft)	106	143		45	162		41	76		166	161	
Internal Link Dist (ft)		86			760			143			135	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	328	1904		435	1907		272	1767		545	1744	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.41	0.31		0.14	0.39		0.17	0.17		0.44	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 84			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 59.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave



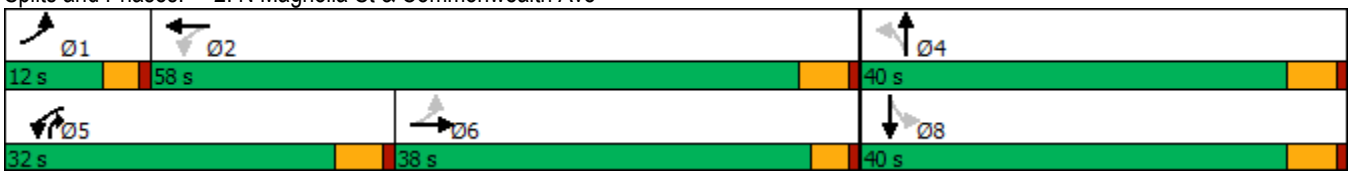


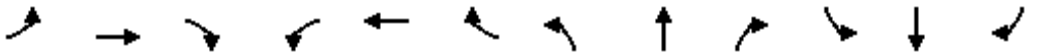
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	450	215	657	468	3	237	8	637	2	0	1
Future Volume (vph)	3	450	215	657	468	3	237	8	637	2	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3283	0	3303	3468	0	0	1778	2733	0	1756	0
Flt Permitted	0.461			0.185				0.732			0.901	
Satd. Flow (perm)	876	3283	0	643	3468	0	0	1364	2733	0	1635	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		75			1				700		109	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			131			110	
Travel Time (s)		9.1			20.9			3.0			2.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	4%	6%	4%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	731	0	722	517	0	0	269	700	0	3	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		6	6		0	0	
Act Effct Green (s)	39.6	34.1		61.6	59.7			35.1	23.6		35.1	
Actuated g/C Ratio	0.37	0.32		0.58	0.56			0.33	0.22		0.33	
v/c Ratio	0.01	0.67		0.75	0.27			0.60	0.61		0.00	
Control Delay	12.0	32.0		21.7	12.9			37.5	5.1		0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.0	32.0		21.7	12.9			37.5	5.1		0.0	
LOS	B	C		C	B			D	A		A	
Approach Delay		31.9			18.0			14.1				
Approach LOS		C			B			B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	213		142	86			160	0		0	
Queue Length 95th (ft)	5	282		210	144			253	49		0	
Internal Link Dist (ft)		454			1148			51			30	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	415	1098		1045	1941			448	1215		610	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.67		0.69	0.27			0.60	0.58		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 106.7			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.2		Intersection LOS: C	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



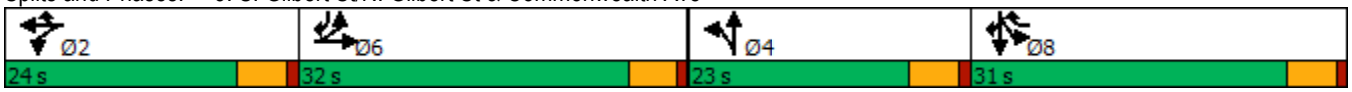


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	568	490	19	57	244	381	22	449	60	487	256	852
Future Volume (vph)	568	490	19	57	244	381	22	449	60	487	256	852
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1564	3267	0	1770	3438	1509	0	3441	0	1665	1736	2733
Flt Permitted	0.950	0.985		0.950				0.998		0.950	0.984	
Satd. Flow (perm)	1564	3267	0	1770	3438	1509	0	3441	0	1665	1736	2733
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				69		11				869
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		1228			409			255			384	
Travel Time (s)		20.9			7.0			4.3			6.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	3%	12%	2%	5%	7%	0%	2%	11%	3%	2%	4%
Shared Lane Traffic (%)	38%									25%		
Lane Group Flow (vph)	360	739	0	58	249	389	0	541	0	373	385	869
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	32.0	32.0		24.0	24.0		23.0	23.0		31.0	31.0	
Total Split (%)	29.1%	29.1%		21.8%	21.8%		20.9%	20.9%		28.2%	28.2%	
Maximum Green (s)	27.0	27.0		19.0	19.0		18.0	18.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	3	3		1	1		4	4		2	2	
Act Effct Green (s)	27.0	27.0		19.0	19.0	50.0		18.0		26.0	26.0	53.0
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.45		0.16		0.24	0.24	0.48
v/c Ratio	0.94	0.92		0.19	0.42	0.54		0.95		0.95	0.94	0.49
Control Delay	74.9	58.3		40.9	43.1	20.8		71.6		76.6	73.7	1.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	74.9	58.3		40.9	43.1	20.8		71.6		76.6	73.7	1.6
LOS	E	E		D	D	C		E		E	E	A
Approach Delay		63.8			30.4			71.6			35.8	
Approach LOS		E			C			E			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	274	279		35	83	158		197		273	282	0
Queue Length 95th (ft)	#474	#401		74	123	252		#306		#470	#476	15
Internal Link Dist (ft)		1148			329			175			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	383	803		305	593	723		572		393	410	1767
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.94	0.92		0.19	0.42	0.54		0.95		0.95	0.94	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 47.5		Intersection LOS: D	
Intersection Capacity Utilization 79.0%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	635	14	16	642	18	27
Future Vol, veh/h	635	14	16	642	18	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	8	0	4	0	0
Mvmt Flow	648	14	16	655	18	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	662	0	1015	331
Stage 1	-	-	-	-	655	-
Stage 2	-	-	-	-	360	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	936	-	238	671
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	683	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	936	-	232	671
Mov Cap-2 Maneuver	-	-	-	-	353	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	683	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	493	-	-	936	-
HCM Lane V/C Ratio	0.093	-	-	0.017	-
HCM Control Delay (s)	13.1	-	-	8.9	0.1
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	662	658	7	3	4
Future Vol, veh/h	7	662	658	7	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	720	715	8	3	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	723	0	-	0	1095	362
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	376	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	875	-	-	-	208	635
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	664	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	875	-	-	-	205	635
Mov Cap-2 Maneuver	-	-	-	-	327	-
Stage 1	-	-	-	-	437	-
Stage 2	-	-	-	-	664	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	875	-	-	-	452
HCM Lane V/C Ratio	0.009	-	-	-	0.017
HCM Control Delay (s)	9.2	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	665	664	9	0	1
Future Vol, veh/h	7	665	664	9	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	723	722	10	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	732	0	-	0	1105	366
Stage 1	-	-	-	-	727	-
Stage 2	-	-	-	-	378	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	868	-	-	-	205	631
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	663	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	868	-	-	-	202	631
Mov Cap-2 Maneuver	-	-	-	-	324	-
Stage 1	-	-	-	-	432	-
Stage 2	-	-	-	-	663	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	868	-	-	-	631
HCM Lane V/C Ratio	0.009	-	-	-	0.002
HCM Control Delay (s)	9.2	-	-	-	10.7
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

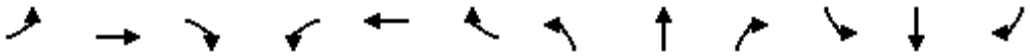
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	668	1	4	663	1	4
Future Vol, veh/h	668	1	4	663	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	0	25	4	0	25
Mvmt Flow	682	1	4	677	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	683	0	1030	342
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	347	-
Critical Hdwy	-	-	4.6	-	6.8	7.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.45	-	3.5	3.55
Pot Cap-1 Maneuver	-	-	768	-	233	591
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	693	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	768	-	231	591
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	693	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	520	-	-	768	-
HCM Lane V/C Ratio	0.01	-	-	0.005	-
HCM Control Delay (s)	12	-	-	9.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-



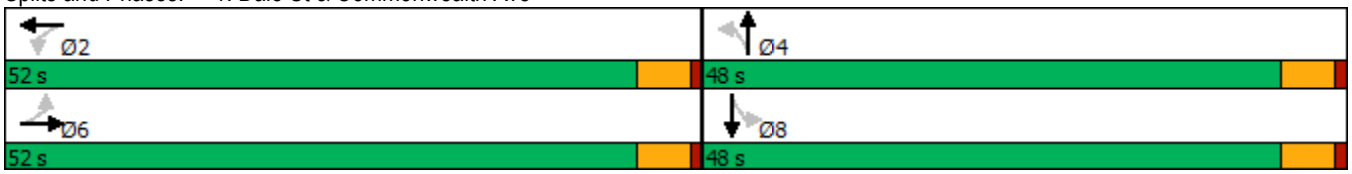
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	371	53	52	511	293	48	385	51	162	301	101
Future Volume (vph)	160	371	53	52	511	293	48	385	51	162	301	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1787	3472	0	1770	3324	0	1805	3518	0	1805	3363	0
Flt Permitted	0.290			0.491			0.430			0.397		
Satd. Flow (perm)	546	3472	0	915	3324	0	817	3518	0	754	3363	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			152			18			57	
Link Speed (mph)		30			40			40			30	
Link Distance (ft)		166			840			223			215	
Travel Time (s)		3.8			14.3			3.8			4.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	2%	3%	2%	0%	1%	0%	0%	3%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	451	0	55	856	0	51	464	0	172	427	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	3	3		0	0		5	5		0	0	
Act Effct Green (s)	47.6	47.6		47.6	47.6		22.3	22.3		22.3	22.3	
Actuated g/C Ratio	0.60	0.60		0.60	0.60		0.28	0.28		0.28	0.28	
v/c Ratio	0.52	0.22		0.10	0.42		0.22	0.47		0.82	0.44	
Control Delay	20.4	9.0		10.5	9.1		23.1	23.6		55.6	20.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	20.4	9.0		10.5	9.1		23.1	23.6		55.6	20.8	
LOS	C	A		B	A		C	C		E	C	
Approach Delay		12.1			9.2			23.6			30.8	
Approach LOS		B			A			C			C	

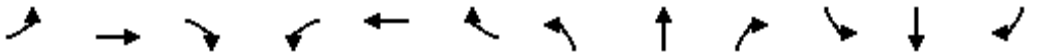
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	44	46		11	85		19	95		79	77	
Queue Length 95th (ft)	#157	105		38	189		46	134		153	114	
Internal Link Dist (ft)		86			760			143			135	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	324	2072		543	2037		444	1921		410	1855	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.52	0.22		0.10	0.42		0.11	0.24		0.42	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 80			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 17.6		Intersection LOS: B	
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dale St & Commonwealth Ave



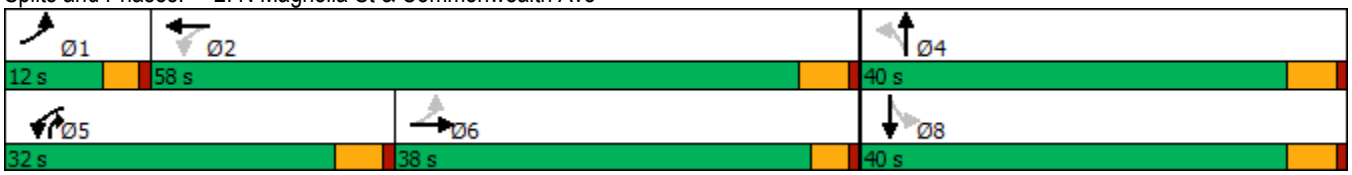


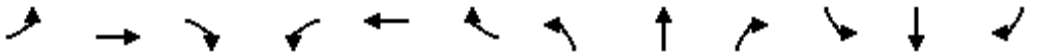
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	444	137	572	650	0	262	1	710	3	1	2
Future Volume (vph)	2	444	137	572	650	0	262	1	710	3	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3441	0	3367	3539	0	0	1775	2787	0	1771	0
Flt Permitted	0.386			0.252				0.723			0.907	
Satd. Flow (perm)	733	3441	0	893	3539	0	0	1347	2787	0	1646	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38							763		2	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			131			110	
Travel Time (s)		9.1			20.9			3.0			2.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	2%	4%	2%	0%	2%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	624	0	615	699	0	0	283	763	0	6	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		1	1		0	0	
Act Effct Green (s)	39.8	34.2		58.0	56.2			35.1	19.8		35.1	
Actuated g/C Ratio	0.39	0.33		0.56	0.55			0.34	0.19		0.34	
v/c Ratio	0.01	0.53		0.63	0.36			0.62	0.66		0.01	
Control Delay	11.5	28.7		15.1	14.3			36.3	5.7		21.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	11.5	28.7		15.1	14.3			36.3	5.7		21.3	
LOS	B	C		B	B			D	A		C	
Approach Delay		28.7			14.7			14.0			21.3	
Approach LOS		C			B			B			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	162		105	124			152	0		2	
Queue Length 95th (ft)	4	238		138	200			267	51		12	
Internal Link Dist (ft)		454			1148			51			30	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	383	1168		1151	1928			458	1293		560	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.53		0.53	0.36			0.62	0.59		0.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 103.1			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 17.4		Intersection LOS: B	
Intersection Capacity Utilization 65.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



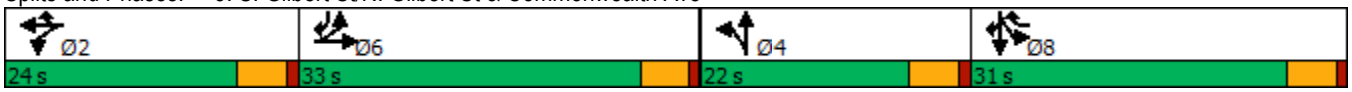


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	684	400	42	93	455	534	33	347	44	461	292	717
Future Volume (vph)	684	400	42	93	455	534	33	347	44	461	292	717
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1626	3296	0	1805	3505	1568	0	3509	0	1649	1766	2760
Flt Permitted	0.950	0.980		0.950				0.996		0.950	0.988	
Satd. Flow (perm)	1626	3296	0	1805	3505	1568	0	3509	0	1649	1766	2760
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				69		10				710
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			409			255			384	
Travel Time (s)		20.9			7.0			5.8			6.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	3%	0%	0%	3%	3%	0%	1%	0%	4%	0%	3%
Shared Lane Traffic (%)	46%									20%		
Lane Group Flow (vph)	385	789	0	97	474	556	0	441	0	384	400	747
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	33.0	33.0		24.0	24.0		22.0	22.0		31.0	31.0	
Total Split (%)	30.0%	30.0%		21.8%	21.8%		20.0%	20.0%		28.2%	28.2%	
Maximum Green (s)	28.0	28.0		19.0	19.0		17.0	17.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	10	10		10	10		8	8		4	4	
Act Effct Green (s)	28.0	28.0		19.0	19.0	50.0		16.6		26.0	26.0	54.0
Actuated g/C Ratio	0.26	0.26		0.17	0.17	0.46		0.15		0.24	0.24	0.49
v/c Ratio	0.93	0.93		0.31	0.78	0.74		0.82		0.98	0.95	0.43
Control Delay	70.4	58.8		43.1	53.5	28.5		57.3		84.3	76.5	1.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	70.4	58.8		43.1	53.5	28.5		57.3		84.3	76.5	1.6
LOS	E	E		D	D	C		E		F	E	A
Approach Delay		62.6			40.3			57.3			41.9	
Approach LOS		E			D			E			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	292	298		61	170	279		156		285	294	3
Queue Length 95th (ft)	#501	#432		112	#236	430		214		#497	#503	18
Internal Link Dist (ft)		1148			329			175			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	415	845		312	607	753		558		391	419	1720
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.93	0.93		0.31	0.78	0.74		0.79		0.98	0.95	0.43

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 109.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 48.8		Intersection LOS: D	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	577	20	19	894	4	14
Future Vol, veh/h	577	20	19	894	4	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	614	21	20	951	4	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	635	0	1141	318
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	958	-	197	684
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	958	-	188	684
Mov Cap-2 Maneuver	-	-	-	-	319	-
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	545	-	-	958	-
HCM Lane V/C Ratio	0.035	-	-	0.021	-
HCM Control Delay (s)	11.8	-	-	8.8	0.2
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	3	585	921	2	3	8
Future Vol, veh/h	3	585	921	2	3	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	636	1001	2	3	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1003	0	-	0	1326	502
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	686	-	-	-	147	515
Stage 1	-	-	-	-	316	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	686	-	-	-	146	515
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	686	-	-	-	400
HCM Lane V/C Ratio	0.005	-	-	-	0.03
HCM Control Delay (s)	10.3	-	-	-	14.3
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↱	
Traffic Vol, veh/h	0	597	914	2	5	3
Future Vol, veh/h	0	597	914	2	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	649	993	2	5	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	-	0	-	0	1319	498
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	-	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	0	-	-	-	149	518
Stage 1	0	-	-	-	319	-
Stage 2	0	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	149	518
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	319	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	315
HCM Lane V/C Ratio	-	-	-	0.028
HCM Control Delay (s)	-	-	-	16.8
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	0.1

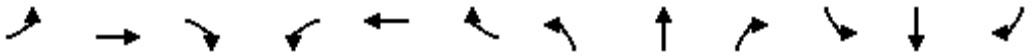
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	598	4	5	916	2	4
Future Vol, veh/h	598	4	5	916	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	50	0
Mvmt Flow	623	4	5	954	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	627	0	1112	314
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	487	-
Critical Hdwy	-	-	4.1	-	7.8	6.9
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	-	-	2.2	-	4	3.3
Pot Cap-1 Maneuver	-	-	965	-	141	688
Stage 1	-	-	-	-	383	-
Stage 2	-	-	-	-	464	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	965	-	139	688
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	379	-
Stage 2	-	-	-	-	464	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	436	-	-	965	-
HCM Lane V/C Ratio	0.014	-	-	0.005	-
HCM Control Delay (s)	13.4	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

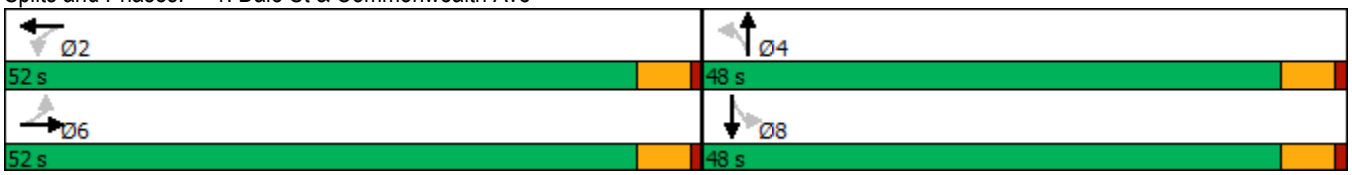


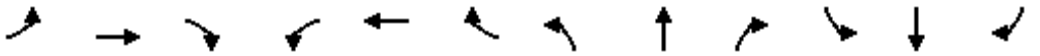
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	428	74	52	419	207	38	212	36	202	413	102
Future Volume (vph)	113	428	74	52	419	207	38	212	36	202	413	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1656	3340	0	1805	3277	0	1703	3385	0	1787	3329	0
Flt Permitted	0.325			0.398			0.294			0.559		
Satd. Flow (perm)	567	3340	0	756	3277	0	527	3385	0	1052	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			114			24			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		166			840			223			215	
Travel Time (s)		3.8			19.1			5.1			4.9	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	9%	6%	4%	0%	4%	6%	6%	4%	6%	1%	4%	10%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	605	0	63	754	0	46	298	0	243	621	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	6	6		1	1		4	4		1	1	
Act Effct Green (s)	47.6	47.6		47.6	47.6		26.5	26.5		26.5	26.5	
Actuated g/C Ratio	0.56	0.56		0.56	0.56		0.31	0.31		0.31	0.31	
v/c Ratio	0.42	0.32		0.15	0.40		0.28	0.28		0.73	0.58	
Control Delay	19.2	11.5		13.1	10.8		24.8	19.5		38.7	24.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	19.2	11.5		13.1	10.8		24.8	19.5		38.7	24.0	
LOS	B	B		B	B		C	B		D	C	
Approach Delay		12.9			11.0			20.2			28.2	
Approach LOS		B			B			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	37	77		14	88		18	55		112	132	
Queue Length 95th (ft)	107	146		45	167		41	76		170	161	
Internal Link Dist (ft)		86			760			143			135	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	320	1898		427	1901		272	1761		543	1739	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.42	0.32		0.15	0.40		0.17	0.17		0.45	0.36	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 84.3			
Natural Cycle: 40			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 18.0		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 1: Dale St & Commonwealth Ave



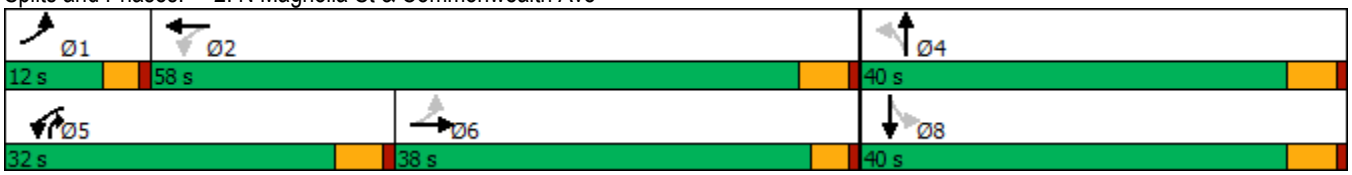


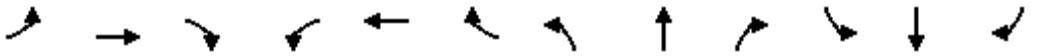
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	462	226	657	480	3	248	8	637	2	0	1
Future Volume (vph)	3	462	226	657	480	3	248	8	637	2	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3280	0	3303	3468	0	0	1778	2733	0	1756	0
Flt Permitted	0.455			0.173				0.731			0.899	
Satd. Flow (perm)	864	3280	0	602	3468	0	0	1363	2733	0	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		78			1				700		109	
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		534			1228			131			110	
Travel Time (s)		12.1			20.9			3.0			2.5	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	5%	4%	6%	4%	0%	2%	0%	4%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	3	756	0	722	530	0	0	282	700	0	3	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		6	6		1	1	
Act Effct Green (s)	39.6	34.0		61.8	59.9			35.0	23.8		35.0	
Actuated g/C Ratio	0.37	0.32		0.58	0.56			0.33	0.22		0.33	
v/c Ratio	0.01	0.69		0.76	0.27			0.63	0.61		0.00	
Control Delay	12.0	32.7		23.2	13.0			38.8	5.0		0.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.0	32.7		23.2	13.0			38.8	5.0		0.0	
LOS	B	C		C	B			D	A		A	
Approach Delay		32.6			18.9			14.8				
Approach LOS		C			B			B				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	223		150	88			170	0		0	
Queue Length 95th (ft)	5	294		218	148			268	49		0	
Internal Link Dist (ft)		454			1148			51			30	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	410	1097		1031	1944			446	1214		608	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.69		0.70	0.27			0.63	0.58		0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 106.9			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 69.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



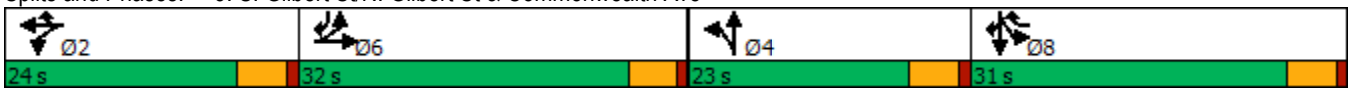


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	571	499	19	57	253	381	22	449	60	487	256	855
Future Volume (vph)	571	499	19	57	253	381	22	449	60	487	256	855
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1564	3268	0	1770	3438	1509	0	3441	0	1665	1736	2733
Flt Permitted	0.950	0.985		0.950				0.998		0.950	0.984	
Satd. Flow (perm)	1564	3268	0	1770	3438	1509	0	3441	0	1665	1736	2733
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				69		11				872
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			409			255			384	
Travel Time (s)		20.9			7.0			5.8			6.5	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	5%	3%	12%	2%	5%	7%	0%	2%	11%	3%	2%	4%
Shared Lane Traffic (%)	38%									25%		
Lane Group Flow (vph)	361	750	0	58	258	389	0	541	0	373	385	872
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	32.0	32.0		24.0	24.0		23.0	23.0		31.0	31.0	
Total Split (%)	29.1%	29.1%		21.8%	21.8%		20.9%	20.9%		28.2%	28.2%	
Maximum Green (s)	27.0	27.0		19.0	19.0		18.0	18.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	3	3		1	1		4	4		2	2	
Act Effct Green (s)	27.0	27.0		19.0	19.0	50.0		18.0		26.0	26.0	53.0
Actuated g/C Ratio	0.25	0.25		0.17	0.17	0.45		0.16		0.24	0.24	0.48
v/c Ratio	0.94	0.93		0.19	0.44	0.54		0.95		0.95	0.94	0.49
Control Delay	75.4	60.4		40.9	43.3	20.8		71.6		76.6	73.7	1.6
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	75.4	60.4		40.9	43.3	20.8		71.6		76.6	73.7	1.6
LOS	E	E		D	D	C		E		E	E	A
Approach Delay		65.2			30.7			71.6			35.8	
Approach LOS		E			C			E			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	275	285		35	86	158		197		273	282	0
Queue Length 95th (ft)	#475	#409		74	127	252		#306		#470	#476	15
Internal Link Dist (ft)		1148			329			175			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	383	803		305	593	723		572		393	410	1768
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.94	0.93		0.19	0.44	0.54		0.95		0.95	0.94	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 47.9		Intersection LOS: D	
Intersection Capacity Utilization 79.5%		ICU Level of Service D	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	649	660	7	3	17
Future Vol, veh/h	20	649	660	7	3	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	705	717	8	3	18

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	725	0	-	0	1118	363
Stage 1	-	-	-	-	721	-
Stage 2	-	-	-	-	397	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	874	-	-	-	201	634
Stage 1	-	-	-	-	443	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	874	-	-	-	193	634
Mov Cap-2 Maneuver	-	-	-	-	314	-
Stage 1	-	-	-	-	425	-
Stage 2	-	-	-	-	648	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	874	-	-	-	550
HCM Lane V/C Ratio	0.025	-	-	-	0.04
HCM Control Delay (s)	9.2	-	-	-	11.8
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	638	14	16	649	18	27
Future Vol, veh/h	638	14	16	649	18	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	4	8	0	4	0	0
Mvmt Flow	651	14	16	662	18	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	665	0	1021	333
Stage 1	-	-	-	-	658	-
Stage 2	-	-	-	-	363	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	934	-	236	669
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	934	-	230	669
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	491	-	-	934	-
HCM Lane V/C Ratio	0.094	-	-	0.017	-
HCM Control Delay (s)	13.1	-	-	8.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	3	662	664	32	1	23
Future Vol, veh/h	3	662	664	32	1	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	720	722	35	1	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	757	0	-	0	1106	379
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	366	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	850	-	-	-	205	619
Stage 1	-	-	-	-	433	-
Stage 2	-	-	-	-	672	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	850	-	-	-	204	619
Mov Cap-2 Maneuver	-	-	-	-	325	-
Stage 1	-	-	-	-	430	-
Stage 2	-	-	-	-	672	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	850	-	-	-	597
HCM Lane V/C Ratio	0.004	-	-	-	0.044
HCM Control Delay (s)	9.3	0	-	-	11.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

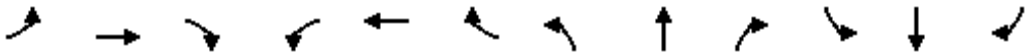
Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	684	1	4	695	1	4
Future Vol, veh/h	684	1	4	695	1	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	3	0	25	4	0	25
Mvmt Flow	698	1	4	709	1	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	699	0	1062	350
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	363	-
Critical Hdwy	-	-	4.6	-	6.8	7.4
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.45	-	3.5	3.55
Pot Cap-1 Maneuver	-	-	756	-	222	584
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	680	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	756	-	220	584
Mov Cap-2 Maneuver	-	-	-	-	343	-
Stage 1	-	-	-	-	456	-
Stage 2	-	-	-	-	680	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	512	-	-	756	-
HCM Lane V/C Ratio	0.01	-	-	0.005	-
HCM Control Delay (s)	12.1	-	-	9.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-



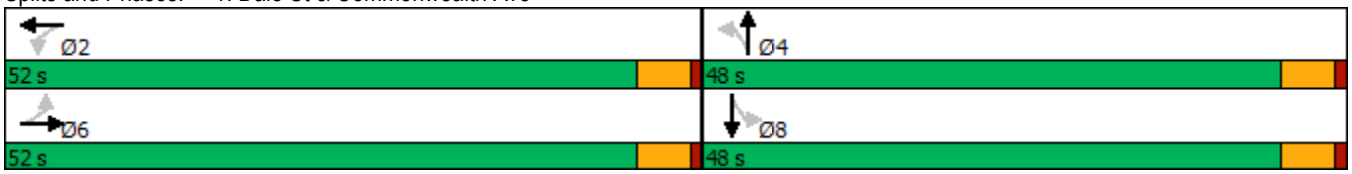
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	160	378	53	52	520	297	48	385	51	166	301	101
Future Volume (vph)	160	378	53	52	520	297	48	385	51	166	301	101
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	115		0	90		0	120		0	75		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1787	3476	0	1770	3324	0	1805	3518	0	1805	3363	0
Flt Permitted	0.284			0.487			0.432			0.400		
Satd. Flow (perm)	534	3476	0	907	3324	0	821	3518	0	760	3363	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21			152			18			57	
Link Speed (mph)		30			40			30			30	
Link Distance (ft)		166			840			223			215	
Travel Time (s)		3.8			14.3			5.1			4.9	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	1%	2%	2%	2%	3%	2%	0%	1%	0%	0%	3%	4%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	170	458	0	55	869	0	51	464	0	177	427	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	52.0	52.0		52.0	52.0		48.0	48.0		48.0	48.0	
Total Split (%)	52.0%	52.0%		52.0%	52.0%		48.0%	48.0%		48.0%	48.0%	
Maximum Green (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		5	5		0	0	
Act Effct Green (s)	47.6	47.6		47.6	47.6		22.9	22.9		22.9	22.9	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.28	0.28		0.28	0.28	
v/c Ratio	0.54	0.22		0.10	0.43		0.22	0.46		0.82	0.43	
Control Delay	21.8	9.3		10.8	9.5		22.9	23.4		55.2	20.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.8	9.3		10.8	9.5		22.9	23.4		55.2	20.6	
LOS	C	A		B	A		C	C		E	C	
Approach Delay		12.7			9.5			23.3			30.7	
Approach LOS		B			A			C			C	

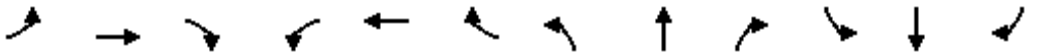
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	46	48		11	89		19	95		82	77	
Queue Length 95th (ft)	#177	108		39	197		46	134		158	114	
Internal Link Dist (ft)		86			760			143			135	
Turn Bay Length (ft)	115			90			120			75		
Base Capacity (vph)	315	2060		535	2024		443	1908		410	1842	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.54	0.22		0.10	0.43		0.12	0.24		0.43	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 80.6			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Dale St & Commonwealth Ave



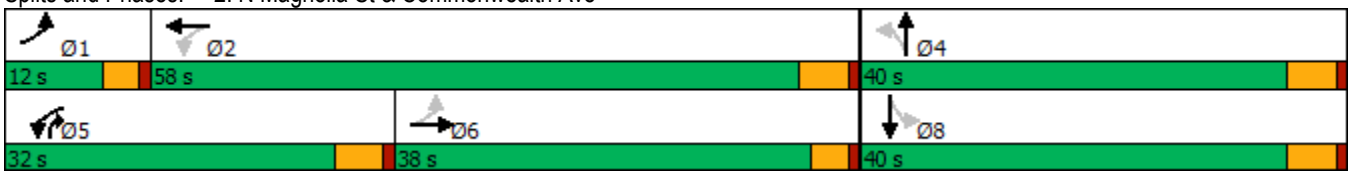


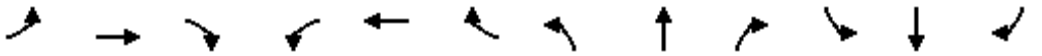
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	456	148	572	662	0	273	1	710	3	1	2
Future Volume (vph)	2	456	148	572	662	0	273	1	710	3	1	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125		0	270		0	0		0	0		0
Storage Lanes	1		0	2		0	0		2	0		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1805	3434	0	3367	3539	0	0	1775	2787	0	1771	0
Flt Permitted	0.381			0.237				0.723			0.905	
Satd. Flow (perm)	724	3434	0	840	3539	0	0	1347	2787	0	1642	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41							763		2	
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		534			1228			131			110	
Travel Time (s)		9.1			20.9			3.0			2.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	1%	2%	4%	2%	0%	2%	0%	2%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	2	649	0	615	712	0	0	295	763	0	6	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Over	Perm	NA	
Protected Phases	1	6		5	2			4	5		8	
Permitted Phases	6			2			4			8		
Detector Phase	1	6		5	2		4	4	5	8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	12.0	23.0		12.0	23.0		23.0	23.0	12.0	23.0	23.0	
Total Split (s)	12.0	38.0		32.0	58.0		40.0	40.0	32.0	40.0	40.0	
Total Split (%)	10.9%	34.5%		29.1%	52.7%		36.4%	36.4%	29.1%	36.4%	36.4%	
Maximum Green (s)	8.0	34.0		27.0	53.0		35.0	35.0	27.0	35.0	35.0	
Yellow Time (s)	3.0	3.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max		Max	Max	None	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)		1			0		1	1		3	3	
Act Effct Green (s)	39.8	34.3		58.2	56.4			35.1	20.0		35.1	
Actuated g/C Ratio	0.39	0.33		0.56	0.55			0.34	0.19		0.34	
v/c Ratio	0.01	0.56		0.64	0.37			0.65	0.66		0.01	
Control Delay	12.0	29.2		15.3	14.4			37.6	5.6		21.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	12.0	29.2		15.3	14.4			37.6	5.6		21.5	
LOS	B	C		B	B			D	A		C	
Approach Delay		29.2			14.8			14.5			21.5	
Approach LOS		C			B			B			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	1	169		105	127			161	0		2	
Queue Length 95th (ft)	4	252		137	204			284	51		12	
Internal Link Dist (ft)		454			1148			51			30	
Turn Bay Length (ft)	125			270								
Base Capacity (vph)	380	1165		1135	1932			457	1292		558	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.01	0.56		0.54	0.37			0.65	0.59		0.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 103.3			
Natural Cycle: 60			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: N Magnolia St & Commonwealth Ave



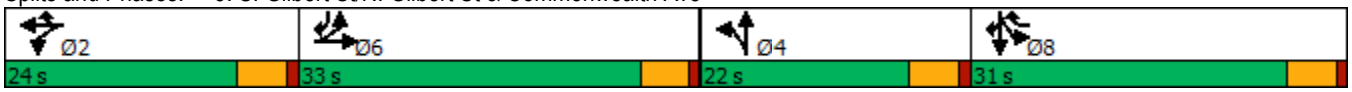


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	687	409	42	93	464	534	33	347	44	461	292	720
Future Volume (vph)	687	409	42	93	464	534	33	347	44	461	292	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	250		0	170		170	0		0	0		290
Storage Lanes	1		0	1		1	0		0	1		2
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1626	3295	0	1805	3505	1568	0	3509	0	1649	1766	2760
Flt Permitted	0.950	0.980		0.950				0.996		0.950	0.988	
Satd. Flow (perm)	1626	3295	0	1805	3505	1568	0	3509	0	1649	1766	2760
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				69		10				708
Link Speed (mph)		40			40			30			40	
Link Distance (ft)		1228			409			255			384	
Travel Time (s)		20.9			7.0			5.8			6.5	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	3%	0%	0%	3%	3%	0%	1%	0%	4%	0%	3%
Shared Lane Traffic (%)	45%									20%		
Lane Group Flow (vph)	394	792	0	97	483	556	0	441	0	384	400	750
Turn Type	Split	NA		Split	NA	pt+ov	Split	NA		Split	NA	pt+ov
Protected Phases	6	6		2	2	2 8	4	4		8	8	6 8
Permitted Phases												
Detector Phase	6	6		2	2	2 8	4	4		8	8	6 8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	23.0	23.0		23.0	23.0		23.0	23.0		23.0	23.0	
Total Split (s)	33.0	33.0		24.0	24.0		22.0	22.0		31.0	31.0	
Total Split (%)	30.0%	30.0%		21.8%	21.8%		20.0%	20.0%		28.2%	28.2%	
Maximum Green (s)	28.0	28.0		19.0	19.0		17.0	17.0		26.0	26.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		Max	Max		None	None		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0		11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	10	10		10	10		8	8		4	4	
Act Effct Green (s)	28.0	28.0		19.0	19.0	50.0		16.6		26.0	26.0	54.0
Actuated g/C Ratio	0.26	0.26		0.17	0.17	0.46		0.15		0.24	0.24	0.49
v/c Ratio	0.95	0.94		0.31	0.80	0.74		0.82		0.98	0.95	0.44
Control Delay	74.6	59.4		43.1	54.4	28.5		57.3		84.3	76.5	1.7
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	74.6	59.4		43.1	54.4	28.5		57.3		84.3	76.5	1.7
LOS	E	E		D	D	C		E		F	E	A
Approach Delay		64.5			40.8			57.3			41.9	
Approach LOS		E			D			E			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	302	300		61	174	279		156		285	294	3
Queue Length 95th (ft)	#517	#435		112	#250	430		214		#497	#503	19
Internal Link Dist (ft)		1148			329			175			304	
Turn Bay Length (ft)	250			170		170						290
Base Capacity (vph)	415	845		312	607	753		558		391	419	1719
Starvation Cap Reductn	0	0		0	0	0		0		0	0	0
Spillback Cap Reductn	0	0		0	0	0		0		0	0	0
Storage Cap Reductn	0	0		0	0	0		0		0	0	0
Reduced v/c Ratio	0.95	0.94		0.31	0.80	0.74		0.79		0.98	0.95	0.44

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 109.6			
Natural Cycle: 95			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.98			
Intersection Signal Delay: 49.4		Intersection LOS: D	
Intersection Capacity Utilization 83.6%		ICU Level of Service E	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3: S. Gilbert St/N. Gilbert St & Commonwealth Ave



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	16	594	900	2	4	20
Future Vol, veh/h	16	594	900	2	4	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	646	978	2	4	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	980	0	-	0	1336	490
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	357	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	700	-	-	-	145	524
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	679	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	700	-	-	-	139	524
Mov Cap-2 Maneuver	-	-	-	-	246	-
Stage 1	-	-	-	-	313	-
Stage 2	-	-	-	-	679	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	700	-	-	-	441
HCM Lane V/C Ratio	0.025	-	-	-	0.059
HCM Control Delay (s)	10.3	-	-	-	13.7
HCM Lane LOS	B	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	577	21	18	898	4	14
Future Vol, veh/h	577	21	18	898	4	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	1	0	0	2	0	0
Mvmt Flow	614	22	19	955	4	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	636	0	1141	318
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	516	-
Critical Hdwy	-	-	4.1	-	6.8	6.9
Critical Hdwy Stg 1	-	-	-	-	5.8	-
Critical Hdwy Stg 2	-	-	-	-	5.8	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	957	-	197	684
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	957	-	189	684
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	480	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	546	-	-	957	-
HCM Lane V/C Ratio	0.035	-	-	0.02	-
HCM Control Delay (s)	11.8	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	589	918	23	28	3
Future Vol, veh/h	2	589	918	23	28	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	640	998	25	30	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1023	0	-	0	1335	512
Stage 1	-	-	-	-	1011	-
Stage 2	-	-	-	-	324	-
Critical Hdwy	4.14	-	-	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	2.22	-	-	-	3.52	3.32
Pot Cap-1 Maneuver	674	-	-	-	145	507
Stage 1	-	-	-	-	312	-
Stage 2	-	-	-	-	705	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	674	-	-	-	144	507
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	310	-
Stage 2	-	-	-	-	705	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	674	-	-	-	261
HCM Lane V/C Ratio	0.003	-	-	-	0.129
HCM Control Delay (s)	10.4	-	-	-	20.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	613	4	5	939	2	4
Future Vol, veh/h	613	4	5	939	2	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	1	0	0	2	50	0
Mvmt Flow	639	4	5	978	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	643	0	1140	322
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	499	-
Critical Hdwy	-	-	4.1	-	7.8	6.9
Critical Hdwy Stg 1	-	-	-	-	6.8	-
Critical Hdwy Stg 2	-	-	-	-	6.8	-
Follow-up Hdwy	-	-	2.2	-	4	3.3
Pot Cap-1 Maneuver	-	-	951	-	134	680
Stage 1	-	-	-	-	375	-
Stage 2	-	-	-	-	457	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	951	-	132	680
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	457	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	13.6
HCM LOS			B

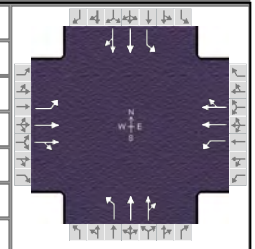
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	427	-	-	951	-
HCM Lane V/C Ratio	0.015	-	-	0.005	-
HCM Control Delay (s)	13.6	-	-	8.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix B

HCS Reports

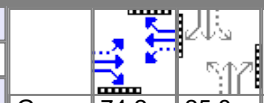
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	Existing AM.xus		
Project Description	Existing AM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	103	382	67	47	373	185	35	193	33	180	376	93

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	74.2	25.8	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	1.0	1.0	0.0	0.0	0.0	0.0				

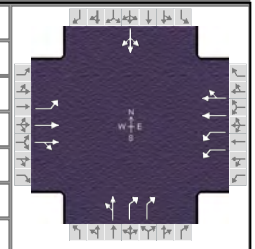
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		79.2		79.2		30.8		30.8
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						18.7		24.0
Green Extension Time (g_e), s		0.0		0.0		1.8		1.8
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	103	229	220	46	289	262	35	114	112	180	241	228
Adjusted Saturation Flow Rate (*s*), veh/h/ln	810	1811	1717	956	1841	1636	895	1841	1748	1164	1841	1715
Queue Service Time (g_s), s	6.4	5.2	5.3	1.2	7.6	6.4	3.9	5.6	5.7	16.4	12.7	12.9
Cycle Queue Clearance Time (g_c), s	14.1	5.2	5.3	6.8	7.6	6.4	16.7	5.6	5.7	22.0	12.7	12.9
Green Ratio (*g/C*)	0.67	0.67	0.67	0.67	0.67	0.67	0.23	0.23	0.23	0.23	0.23	0.23
Capacity (*c*), veh/h	554	1221	1158	663	1241	1103	172	432	411	279	432	403
Volume-to-Capacity Ratio (*X*)	0.186	0.187	0.190	0.070	0.233	0.238	0.204	0.264	0.272	0.644	0.556	0.567
Back of Queue (*Q*), ft/ln (95 th percentile)	55.6	87	80.7	11.8	132.1	91.2	41	113.8	108.4	206.9	244.3	227.9
Back of Queue (*Q*), veh/ln (95 th percentile)	2.1	3.3	3.2	0.5	5.1	3.6	1.6	4.4	4.3	8.2	9.5	9.1
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	0.00	0.00
Uniform Delay (d_1), s/veh	9.9	6.7	6.7	4.8	8.2	6.4	44.4	34.3	34.4	43.3	37.0	37.1
Incremental Delay (d_2), s/veh	0.7	0.3	0.4	0.2	0.4	0.5	0.2	0.1	0.1	0.9	0.4	0.5
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	10.6	7.0	7.1	5.0	8.6	6.8	44.7	34.4	34.5	44.3	37.5	37.6
Level of Service (LOS)	B	A	A	A	A	A	D	C	C	D	D	D
Approach Delay, s/veh / LOS	7.7	A		7.6	A		35.8	D		39.4	D	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.2	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.3	C	3.2	C	2.7	C	2.9	C

HCS7 Signalized Intersection Results Summary

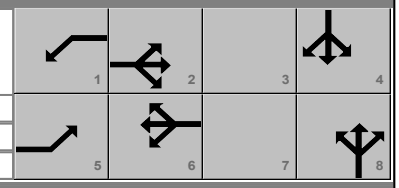
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	Existing AM.xus		
Project Description	Existing AM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	410	196	598	426	3	216	7	580	2	0	1

Signal Information			
Cycle, s	110.0	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	1.0	6.0	57.6	25.4	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



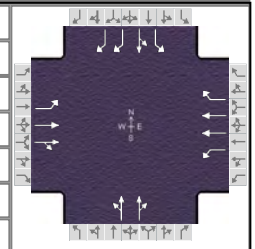
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	6.0	62.6	17.0	73.6		30.4		30.4
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		10.6			23.6		2.1
Green Extension Time (g_e), s	0.0	0.0	1.1	0.0		1.7		2.1
Phase Call Probability	0.09		1.00			1.00		1.00
Max Out Probability	0.00		0.00			0.03		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	3	311	281	533	191	191		223	580		3	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1627	1675	1841	1836		1427	1425		1541	
Queue Service Time (g_s), s	0.1	11.5	9.6	8.6	6.9	6.8		15.5	21.6		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	11.5	9.6	8.6	6.9	6.8		15.7	21.6		0.1	
Green Ratio (*g/C*)	0.53	0.52	0.52	0.65	0.62	0.62		0.23	0.23		0.23	
Capacity (*c*), veh/h	615	957	852	1166	1148	1145		393	657		410	
Volume-to-Capacity Ratio (*X*)	0.005	0.325	0.330	0.457	0.167	0.167		0.567	0.883		0.007	
Back of Queue (*Q*), ft/ln (95 th percentile)	1.4	219.6	152.6	73.7	107.1	103.2		233	314.6		2.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	8.4	6.1	2.8	4.1	4.1		9.2	12.6		0.1	
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	
Uniform Delay (d_1), s/veh	12.0	16.6	12.6	7.2	13.4	13.3		38.6	40.9		32.6	
Incremental Delay (d_2), s/veh	0.0	0.9	1.0	0.0	0.1	0.1		0.5	6.7		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	
Control Delay (*d*), s/veh	12.0	17.5	13.6	7.2	13.5	13.4		39.1	47.6		32.6	
Level of Service (LOS)	B	B	B	A	B	B		D	D		C	
Approach Delay, s/veh / LOS	15.6	B		9.8	A		45.2	D		32.6	C	
Intersection Delay, s/veh / LOS	23.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.9	D	2.2	B	3.2	C	3.3	C
Bicycle LOS Score / LOS	3.1	C	3.4	C	3.8	D	2.4	B

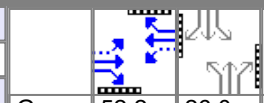
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	Existing AM.xus		
Project Description	Existing AM				

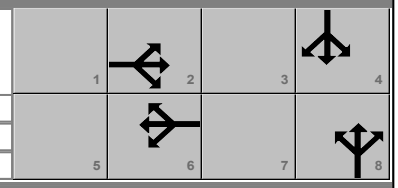


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	517	446	17	52	222	347	20	409	55	444	233	776

Signal Information			
Cycle, s	110.0	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	52.2	26.0	16.8	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	1.0	1.0	1.0	0.0	0.0	0.0						



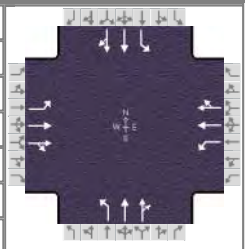
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		12.0		9.0
Phase Duration, s		57.2		57.2		21.8		31.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (g_s), s						16.6		28.0
Green Extension Time (g_e), s		0.0		0.0		0.2		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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	518	233	231	52	222	347	257		227	444	233	776
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1177	1900	1875	943	1809	1610	1893		1821	1810	1900	1425
Queue Service Time (g_s), s	48.4	10.8	10.5	4.0	3.8	15.9	14.6		13.3	26.0	11.7	26.0
Cycle Queue Clearance Time (g_c), s	52.2	10.8	10.5	14.8	3.8	15.9	14.6		13.3	26.0	11.7	26.0
Green Ratio (*g/C*)	0.47	0.47	0.47	0.47	0.47	0.47	0.15		0.15	0.24	0.24	0.24
Capacity (*c*), veh/h	584	901	890	420	1716	764	289		278	428	449	674
Volume-to-Capacity Ratio (*X*)	0.888	0.259	0.260	0.124	0.129	0.454	0.888		0.816	1.038	0.519	1.152
Back of Queue (*Q*), ft/ln (95 th percentile)	562.9	218.5	209.8	42.1	69.5	251.9	350.6		284.8	895.8	229.2	1250.5
Back of Queue (*Q*), veh/ln (95 th percentile)	22.5	8.7	8.4	1.7	2.8	10.1	14.0		11.4	35.8	9.2	50.0
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
Uniform Delay (d_1), s/veh	33.6	25.6	24.7	22.6	16.2	19.4	45.7		45.1	42.0	36.6	42.0
Incremental Delay (d_2), s/veh	19.0	0.6	0.6	0.6	0.2	2.0	29.6		15.4	129.4	0.5	292.5
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
Control Delay (*d*), s/veh	52.7	26.2	25.3	23.2	16.3	21.3	75.3		60.5	171.4	37.1	334.5
Level of Service (LOS)	D	C	C	C	B	C	E		E	F	D	F
Approach Delay, s/veh / LOS	39.9	D		19.7	B		68.4	E		236.9	F	
Intersection Delay, s/veh / LOS	121.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.3	C	3.2	C	3.1	C
Bicycle LOS Score / LOS	3.4	C	2.9	C	2.5	B	5.1	E

HCS7 Signalized Intersection Results Summary

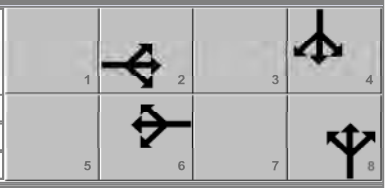
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	Existing PM.xus		
Project Description	Existing PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	146	338	48	47	465	267	44	351	46	148	274	148

Signal Information			
Cycle, s	110.0	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	29.7	0.0	0.0	0.0	0.0
Yellow	4.0	4.0	0.0	0.0	0.0	0.0
Red	1.0	1.0	0.0	0.0	0.0	0.0



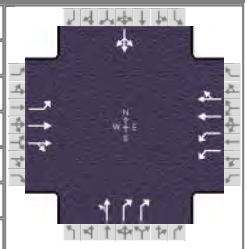
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		75.3		75.3		34.7		34.7
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						17.8		27.7
Green Extension Time (g_e), s		0.0		0.0		2.2		2.0
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	146	196	190	49	402	355	44	201	196	148	220	202
Adjusted Saturation Flow Rate (*s*), veh/h/ln	669	1811	1732	1013	1841	1615	934	1841	1766	995	1841	1626
Queue Service Time (g_s), s	14.4	4.8	4.9	1.2	11.7	9.3	4.5	9.9	10.0	15.8	10.9	11.4
Cycle Queue Clearance Time (g_c), s	26.1	4.8	4.9	6.4	11.7	9.3	15.8	9.9	10.0	25.7	10.9	11.4
Green Ratio (*g/C*)	0.64	0.64	0.64	0.64	0.64	0.64	0.27	0.27	0.27	0.27	0.27	0.27
Capacity (*c*), veh/h	422	1159	1108	667	1177	1033	222	496	476	244	496	438
Volume-to-Capacity Ratio (*X*)	0.346	0.169	0.172	0.073	0.341	0.343	0.199	0.406	0.412	0.606	0.444	0.461
Back of Queue (*Q*), ft/ln (50 th percentile)	61.9	46.7	43.7	6.7	116.6	72.5	27	111.2	105.3	96.7	123.2	110.2
Back of Queue (*Q*), veh/ln (50 th percentile)	2.3	1.8	1.7	0.3	4.5	2.9	1.0	4.3	4.2	3.8	4.8	4.4
Queue Storage Ratio (*RQ*) (50 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	15.4	8.0	8.0	4.9	9.8	7.1	40.0	33.0	33.0	43.5	33.3	33.5
Incremental Delay (d_2), s/veh	2.3	0.3	0.3	0.2	0.7	0.9	0.2	0.2	0.2	0.9	0.2	0.3
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	17.6	8.3	8.4	5.1	10.6	7.9	40.2	33.2	33.2	44.4	33.6	33.8
Level of Service (LOS)	B	A	A	A	B	A	D	C	C	D	C	C
Approach Delay, s/veh / LOS	10.9	B		9.1	A		33.9	C		36.5	D	
Intersection Delay, s/veh / LOS	20.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.0	C	3.3	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.3	C	3.3	C	2.8	C	2.9	C

HCS7 Signalized Intersection Results Summary

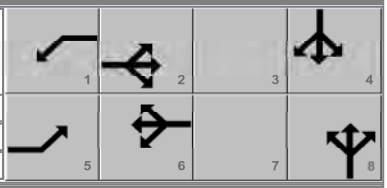
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	Existing PM.xus		
Project Description	Existing PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	404	125	521	551	0	239	1	647	3	1	2

Signal Information			
Cycle, s	110.0	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	0.7	6.3	55.1	27.9	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



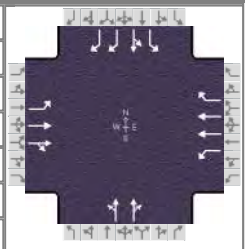
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	5.7	60.1	17.0	71.4		32.9		32.9
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		10.3			26.1		2.3
Green Extension Time (g_e), s	0.0	0.0	1.0	0.0		1.8		2.3
Phase Call Probability	0.06		1.00			1.00		1.00
Max Out Probability	0.00		0.01			0.11		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	2	274	256	533	564	0		240	647		6	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1678	1675	1841	0		1415	1425		1617	
Queue Service Time (g_s), s	0.1	10.2	9.0	8.3	11.1	0.0		16.5	24.1		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	10.2	9.0	8.3	11.1	0.0		16.8	24.1		0.3	
Green Ratio (*g/C*)	0.51	0.50	0.50	0.63	0.60			0.25	0.25		0.25	
Capacity (*c*), veh/h	494	915	841	1193	2222			424	723		459	
Volume-to-Capacity Ratio (*X*)	0.004	0.299	0.305	0.447	0.254	0.000		0.566	0.895		0.013	
Back of Queue (*Q*), ft/ln (50 th percentile)	0.6	112.6	83.9	58.2	124.4	0		143.9	227.7		2.9	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0	4.3	3.4	2.2	4.8	0.0		5.7	9.1		0.1	
Queue Storage Ratio (*RQ*) (50 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	13.4	17.3	14.2	9.0	16.1			36.9	39.6		30.8	
Incremental Delay (d_2), s/veh	0.0	0.8	0.9	0.1	0.2	0.0		0.4	9.6		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	
Control Delay (*d*), s/veh	13.4	18.1	15.1	9.0	16.3			37.4	49.3		30.8	
Level of Service (LOS)	B	B	B	A	B			D	D		C	
Approach Delay, s/veh / LOS	16.6	B		12.8	B		46.0	D		30.8	C	
Intersection Delay, s/veh / LOS	25.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.8	D	2.1	B	3.3	C	3.4	C
Bicycle LOS Score / LOS	3.0	C	3.5	C	3.9	D	2.4	B

HCS7 Signalized Intersection Results Summary

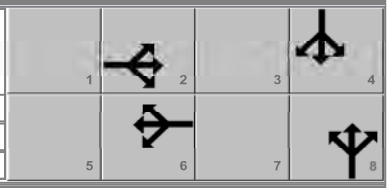
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Existing PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2019	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	Existing PM.xus		
Project Description	Existing PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	623	364	38	85	414	486	30	316	40	420	266	653

Signal Information			
Cycle, s	110.0	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	55.0	26.0	14.0	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	0.0	0.0	0.0
Red	1.0	1.0	1.0	0.0	0.0	0.0



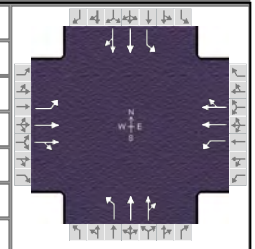
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		12.0		9.0
Phase Duration, s		60.0		60.0		19.0		31.0
Change Period, (*Y+R c*), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (*g s*), s						13.6		27.4
Green Extension Time (*g e*), s		0.0		0.0		0.3		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.37		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	641	209	204	85	414	486	204		182	420	266	653
Adjusted Saturation Flow Rate (*s*), veh/h/ln	988	1900	1837	988	1809	1610	1886		1828	1810	1900	1425
Queue Service Time (*g s*), s	47.9	10.0	9.4	6.1	7.1	23.8	11.6		10.6	25.4	13.7	25.0
Cycle Queue Clearance Time (*g c*), s	55.0	10.0	9.4	16.1	7.1	23.8	11.6		10.6	25.4	13.7	25.0
Green Ratio (*g/C*)	0.50	0.50	0.50	0.50	0.50	0.50	0.13		0.13	0.24	0.24	0.24
Capacity (*c*), veh/h	496	950	919	470	1810	805	240		232	428	449	674
Volume-to-Capacity Ratio (*X*)	1.293	0.220	0.223	0.181	0.229	0.603	0.852		0.784	0.982	0.592	0.969
Back of Queue (*Q*), ft/ln (50 th percentile)	2208.9	120.9	107.1	36.9	71.4	226.5	159.2		130.3	481.6	159	315.1
Back of Queue (*Q*), veh/ln (50 th percentile)	88.4	4.8	4.3	1.5	2.9	9.1	6.4		5.2	19.3	6.4	12.6
Queue Storage Ratio (*RQ*) (50 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	41.1	25.4	23.1	21.0	15.5	19.7	47.0		46.5	41.8	37.3	41.6
Incremental Delay (*d 2*), s/veh	540.8	0.4	0.5	0.8	0.3	3.4	15.4		7.7	70.1	1.5	44.3
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
Control Delay (*d*), s/veh	581.9	25.9	23.5	21.8	15.8	23.1	62.4		54.3	111.9	38.7	85.9
Level of Service (LOS)	F	C	C	C	B	C	E		D	F	D	F
Approach Delay, s/veh / LOS	363.4	F		19.9	B		58.5	E		84.7	F	
Intersection Delay, s/veh / LOS	143.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.3	C	3.2	C	3.2	C
Bicycle LOS Score / LOS	3.4	C	3.2	C	2.4	B	4.9	E

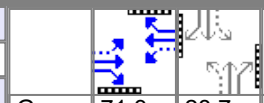
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	No Build AM.xus		
Project Description	No Build AM				

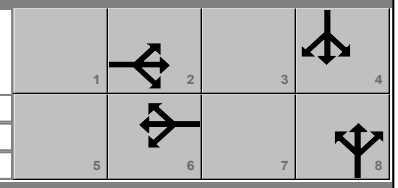


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	113	419	74	52	410	203	38	212	36	198	413	102

Signal Information			
Cycle, s	110.0	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	71.3	28.7	0.0	0.0	0.0	0.0						
Yellow	4.0	4.0	0.0	0.0	0.0	0.0						
Red	1.0	1.0	0.0	0.0	0.0	0.0						



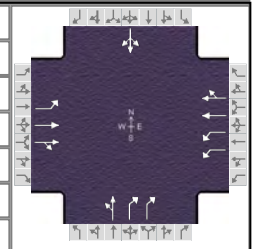
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		76.3		76.3		33.7		33.7
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						20.2		26.8
Green Extension Time (g_e), s		0.0		0.0		2.1		2.0
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	113	252	241	47	288	262	38	132	116	198	265	250
Adjusted Saturation Flow Rate (*s*), veh/h/ln	810	1811	1716	918	1841	1636	858	1841	1569	1141	1841	1715
Queue Service Time (g_s), s	7.7	6.2	6.3	1.4	8.7	7.2	4.4	6.3	6.5	18.4	13.6	13.9
Cycle Queue Clearance Time (g_c), s	16.5	6.2	6.3	8.1	8.7	7.2	18.2	6.3	6.5	24.8	13.6	13.9
Green Ratio (*g/C*)	0.65	0.65	0.65	0.65	0.65	0.65	0.26	0.26	0.26	0.26	0.26	0.26
Capacity (*c*), veh/h	525	1174	1112	606	1193	1060	182	480	410	297	480	448
Volume-to-Capacity Ratio (*X*)	0.215	0.214	0.217	0.077	0.242	0.247	0.209	0.275	0.283	0.666	0.551	0.559
Back of Queue (*Q*), ft/ln (95 th percentile)	69.1	108.9	100.1	13.5	160.8	108.3	43.8	127.6	109.1	222.1	258.3	240.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.6	4.2	4.0	0.5	6.2	4.3	1.7	4.9	4.4	8.8	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	11.9	7.9	7.9	5.8	10.4	7.9	43.0	32.4	32.4	42.3	35.1	35.2
Incremental Delay (d_2), s/veh	0.9	0.4	0.4	0.2	0.5	0.5	0.2	0.1	0.1	1.0	0.4	0.4
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	12.9	8.3	8.4	6.1	10.9	8.4	43.2	32.5	32.6	43.2	35.4	35.6
Level of Service (LOS)	B	A	A	A	B	A	D	C	C	D	D	D
Approach Delay, s/veh / LOS	9.2	A		9.4	A		33.9	C		37.7	D	
Intersection Delay, s/veh / LOS	21.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.2	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.4	C	3.3	C	2.7	C	3.0	C

HCS7 Signalized Intersection Results Summary

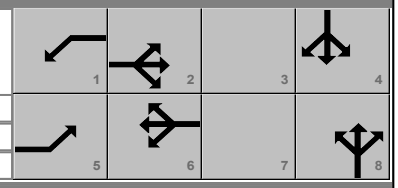
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	No Build AM.xus		
Project Description	No Build AM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	450	215	657	468	3	237	8	637	2	0	1

Signal Information			
Cycle, s	110.0	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	1.0	6.0	55.5	27.5	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



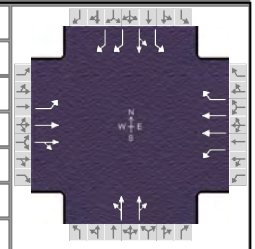
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	6.0	60.5	17.0	71.5		32.5		32.5
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		10.8			25.7		2.1
Green Extension Time (g_e), s	0.0	0.0	1.0	0.0		1.8		2.3
Phase Call Probability	0.09		1.00			1.00		1.00
Max Out Probability	0.00		0.01			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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	3	342	308	533	201	181		245	637		3	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1626	1675	1841	1653		1428	1425		1539	
Queue Service Time (g_s), s	0.1	13.2	11.1	8.8	8.3	8.3		17.0	23.7		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	13.2	11.1	8.8	8.3	8.3		17.1	23.7		0.1	
Green Ratio (*g/C*)	0.51	0.50	0.50	0.63	0.60	0.60		0.25	0.25		0.25	
Capacity (*c*), veh/h	595	921	820	1079	1112	998		422	713		440	
Volume-to-Capacity Ratio (*X*)	0.005	0.371	0.376	0.494	0.181	0.181		0.581	0.893		0.007	
Back of Queue (*Q*), ft/ln (95 th percentile)	1.5	245.1	175.2	82.3	132.7	116.9		248.6	345.7		2.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	9.4	7.0	3.1	5.1	4.7		9.8	13.8		0.1	
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	
Uniform Delay (d_1), s/veh	13.1	17.9	13.6	8.5	16.8	16.7		37.3	39.8		31.0	
Incremental Delay (d_2), s/veh	0.0	1.1	1.2	0.0	0.1	0.1		0.5	9.1		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	
Control Delay (*d*), s/veh	13.1	18.9	14.8	8.6	16.9	16.9		37.8	49.0		31.0	
Level of Service (LOS)	B	B	B	A	B	B		D	D		C	
Approach Delay, s/veh / LOS	17.0	B		12.0	B		45.9	D		31.0	C	
Intersection Delay, s/veh / LOS	25.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	4.0	D	2.2	B	3.3	C	3.4	C
Bicycle LOS Score / LOS	3.1	C	3.5	D	3.9	D	2.4	B

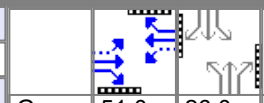
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	No Build AM.xus		
Project Description	No Build AM				

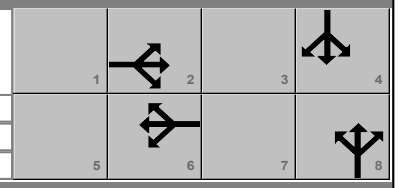


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	568	490	19	57	244	381	22	449	60	487	256	852

Signal Information			
Cycle, s	110.0	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	51.0	26.0	18.0	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	1.0	1.0	1.0	0.0	0.0	0.0						



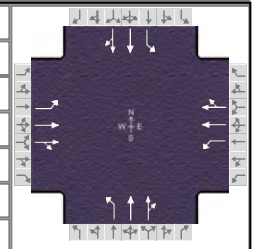
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		12.0		9.0
Phase Duration, s		56.0		56.0		23.0		31.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (g_s), s						18.1		28.0
Green Extension 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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	569	256	254	57	244	381	282		249	487	256	852
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1154	1900	1875	904	1809	1610	1893		1821	1810	1900	1425
Queue Service Time (g_s), s	46.7	12.1	11.8	4.8	4.3	18.3	16.1		14.6	26.0	13.1	26.0
Cycle Queue Clearance Time (g_c), s	51.0	12.1	11.8	16.8	4.3	18.3	16.1		14.6	26.0	13.1	26.0
Green Ratio (*g/C*)	0.46	0.46	0.46	0.46	0.46	0.46	0.16		0.16	0.24	0.24	0.24
Capacity (*c*), veh/h	556	881	869	385	1677	747	310		298	428	449	674
Volume-to-Capacity Ratio (*X*)	1.024	0.291	0.292	0.148	0.145	0.510	0.911		0.835	1.139	0.570	1.265
Back of Queue (*Q*), ft/ln (95 th percentile)	964.5	239	229.3	48.7	78.5	284.1	404.3		317.6	1498.9	252.3	1902.5
Back of Queue (*Q*), veh/ln (95 th percentile)	38.6	9.6	9.2	1.9	3.1	11.4	16.2		12.7	60.0	10.1	76.1
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	0.00
Uniform Delay (d_1), s/veh	37.3	26.9	25.8	24.5	17.0	20.7	45.2		44.6	42.0	37.1	42.0
Incremental Delay (d_2), s/veh	94.0	0.7	0.7	0.8	0.2	2.5	39.8		20.0	280.3	1.1	489.0
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	131.3	27.5	26.5	25.3	17.1	23.2	85.0		64.6	322.3	38.2	531.0
Level of Service (LOS)	F	C	C	C	B	C	F		E	F	D	F
Approach Delay, s/veh / LOS	82.0	F		21.2	C		75.4	E		388.2	F	
Intersection Delay, s/veh / LOS	196.1						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.4	C	3.2	C	3.2	C
Bicycle LOS Score / LOS	3.4	C	3.0	C	2.5	C	5.3	E

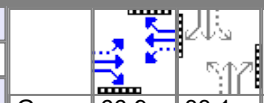
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	No Build PM.xus		
Project Description	No Build PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	371	53	52	511	293	48	385	51	162	301	101

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	66.9	33.1	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	1.0	1.0	0.0	0.0	0.0	0.0				

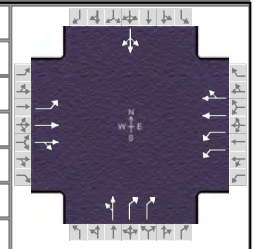
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		71.9		71.9		38.1		38.1
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						16.6		31.1
Green Extension Time (g_e), s		0.0		0.0		2.3		2.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.00		0.07

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	160	215	209	38	311	279	48	233	203	162	207	195
Adjusted Saturation Flow Rate (*s*), veh/h/ln	781	1811	1732	978	1841	1616	952	1841	1585	960	1841	1684
Queue Service Time (g_s), s	13.7	5.8	5.9	1.0	10.0	7.9	4.6	11.1	11.3	17.9	9.7	10.1
Cycle Queue Clearance Time (g_c), s	23.8	5.8	5.9	7.2	10.0	7.9	14.6	11.1	11.3	29.1	9.7	10.1
Green Ratio (*g/C*)	0.61	0.61	0.61	0.61	0.61	0.61	0.30	0.30	0.30	0.30	0.30	0.30
Capacity (*c*), veh/h	469	1102	1054	608	1120	984	265	553	476	256	553	506
Volume-to-Capacity Ratio (*X*)	0.341	0.195	0.198	0.063	0.278	0.283	0.181	0.421	0.427	0.633	0.374	0.386
Back of Queue (*Q*), ft/ln (95 th percentile)	123.3	105	97.7	10.6	188.8	118.9	50	218	190.2	190.1	196.2	180.3
Back of Queue (*Q*), veh/ln (95 th percentile)	4.6	4.0	3.9	0.4	7.3	4.8	1.9	8.4	7.6	7.5	7.6	7.2
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	16.1	9.6	9.6	5.9	12.1	8.7	36.2	30.8	30.9	42.5	30.3	30.4
Incremental Delay (d_2), s/veh	2.0	0.4	0.4	0.2	0.6	0.7	0.1	0.2	0.2	1.0	0.2	0.2
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	0.0	0.0
Control Delay (*d*), s/veh	18.1	10.0	10.0	6.1	12.7	9.4	36.3	31.0	31.1	43.5	30.5	30.6
Level of Service (LOS)	B	A	B	A	B	A	D	C	C	D	C	C
Approach Delay, s/veh / LOS	12.2	B		10.8	B		31.6	C		34.3	C	
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.3	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.3	C	3.4	C	2.9	C	2.9	C

HCS7 Signalized Intersection Results Summary

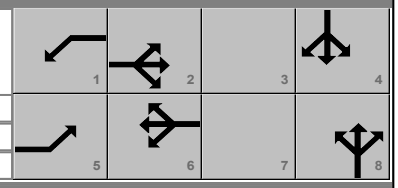
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	No Build PM.xus		
Project Description	No Build PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	444	137	572	650	0	262	1	710	3	1	2

Signal Information			
Cycle, s	110.0	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	0.7	6.3	52.8	30.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



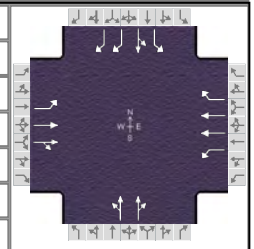
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	5.7	57.8	17.0	69.1		35.2		35.2
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		8.8			28.5		2.3
Green Extension Time (g_e), s	0.0	0.0	0.8	0.0		1.7		2.6
Phase Call Probability	0.06		1.00			1.00		1.00
Max Out Probability	0.00		0.01			0.31		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	2	301	281	440	500	0		263	710		6	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1678	1675	1749	1654		1415	1425		1616	
Queue Service Time (g_s), s	0.1	11.0	9.7	6.8	11.9	0.0		18.0	26.5		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	11.0	9.7	6.8	11.9	0.0		18.2	26.5		0.3	
Green Ratio (*g/C*)	0.49	0.48	0.48	0.61	0.58	0.61		0.27	0.27		0.27	
Capacity (*c*), veh/h	494	877	806	1109	2039			453	782		492	
Volume-to-Capacity Ratio (*X*)	0.004	0.344	0.348	0.397	0.245	0.000		0.580	0.908		0.012	
Back of Queue (*Q*), ft/ln (95 th percentile)	1.1	208.4	159.2	65.8	163.4	0		259.1	388.8		5.1	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.0	8.0	6.4	2.5	6.3	0.0		10.2	15.6		0.2	
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	14.6	17.1	14.0	9.3	20.3			35.6	38.6		29.1	
Incremental Delay (d_2), s/veh	0.0	1.0	1.1	0.0	0.0	0.0		0.5	12.8		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	
Control Delay (*d*), s/veh	14.6	18.2	15.2	9.3	20.3			36.1	51.3		29.1	
Level of Service (LOS)	B	B	B	A	C			D	D		C	
Approach Delay, s/veh / LOS	16.7	B		15.2	B		47.2	D		29.1	C	
Intersection Delay, s/veh / LOS	28.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.9	D	2.1	B	3.3	C	3.4	C
Bicycle LOS Score / LOS	3.1	C	3.6	D	4.1	D	2.4	B

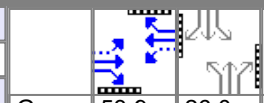
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	No Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	No Build PM.xus		
Project Description	No Build PM				

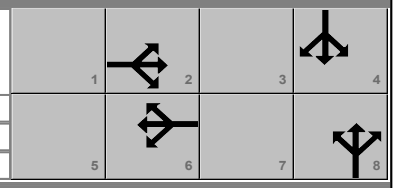


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	684	400	42	93	455	534	33	347	44	461	292	717

Signal Information			
Cycle, s	110.0	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	53.9	26.0	15.1	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	1.0	1.0	1.0	0.0	0.0	0.0						



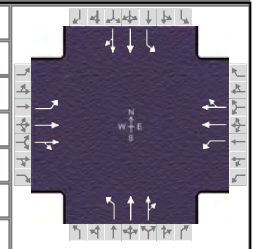
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		12.0		9.0
Phase Duration, s		58.9		58.9		20.1		31.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (g_s), s						14.8		28.0
Green Extension Time (g_e), s		0.0		0.0		0.3		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.88		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	703	230	224	93	455	534	224		200	461	292	717
Adjusted Saturation Flow Rate (*s*), veh/h/ln	951	1900	1836	951	1809	1610	1886		1828	1810	1900	1425
Queue Service Time (g_s), s	45.8	11.0	10.4	7.3	8.1	27.8	12.8		11.6	26.0	15.3	26.0
Cycle Queue Clearance Time (g_c), s	53.9	11.0	10.4	18.3	8.1	27.8	12.8		11.6	26.0	15.3	26.0
Green Ratio (*g/C*)	0.49	0.49	0.49	0.49	0.49	0.49	0.14		0.14	0.24	0.24	0.24
Capacity (*c*), veh/h	462	931	900	437	1773	789	259		251	428	449	674
Volume-to-Capacity Ratio (*X*)	1.523	0.247	0.249	0.213	0.257	0.677	0.866		0.796	1.078	0.650	1.064
Back of Queue (*Q*), ft/ln (95 th percentile)	4952.9	218.4	197.8	77	147.2	406.1	294.5		247	1113.4	290.5	796.1
Back of Queue (*Q*), veh/ln (95 th percentile)	198.1	8.7	7.9	3.1	5.9	16.2	11.8		9.9	44.5	11.6	31.8
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	41.8	26.2	23.8	22.7	16.4	21.4	46.5		46.0	42.0	37.9	42.0
Incremental Delay (d_2), s/veh	950.8	0.5	0.5	1.1	0.4	4.7	20.6		10.6	184.4	2.6	150.0
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	992.5	26.6	24.3	23.8	16.7	26.1	67.1		56.5	226.4	40.5	192.0
Level of Service (LOS)	F	C	C	C	B	C	E		E	F	D	F
Approach Delay, s/veh / LOS	612.9	F		22.0	C		62.1	E		172.7	F	
Intersection Delay, s/veh / LOS	245.2						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.4	C	3.2	C	3.2	C
Bicycle LOS Score / LOS	3.5	C	3.3	C	2.4	B	5.1	E

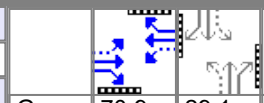
HCS7 Signalized Intersection Results Summary

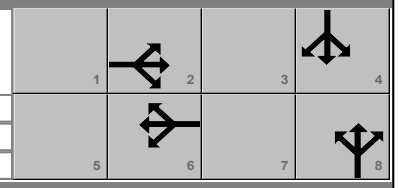
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	Build AM.xus		
Project Description	Build AM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	113	428	74	52	419	207	38	212	36	202	413	102

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



										
							1	2	3	4
Green	70.9	29.1	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	1.0	1.0	0.0	0.0	0.0	0.0				

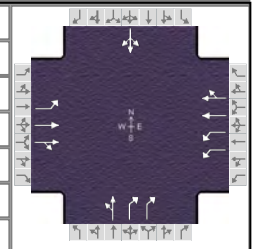
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		75.9		75.9		34.1		34.1
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.2		3.2
Queue Clearance Time (g_s), s						20.1		27.1
Green Extension Time (g_e), s		0.0		0.0		2.1		2.0
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	113	256	246	48	304	275	38	132	116	202	265	250
Adjusted Saturation Flow Rate (*s*), veh/h/ln	788	1811	1718	911	1841	1636	858	1841	1569	1141	1841	1715
Queue Service Time (g_s), s	8.1	6.4	6.5	1.4	9.1	7.5	4.4	6.3	6.5	18.8	13.6	13.8
Cycle Queue Clearance Time (g_c), s	17.4	6.4	6.5	8.4	9.1	7.5	18.1	6.3	6.5	25.1	13.6	13.8
Green Ratio (*g/C*)	0.64	0.64	0.64	0.64	0.64	0.64	0.26	0.26	0.26	0.26	0.26	0.26
Capacity (*c*), veh/h	507	1168	1108	598	1187	1055	185	486	415	301	486	453
Volume-to-Capacity Ratio (*X*)	0.223	0.219	0.222	0.081	0.256	0.261	0.205	0.272	0.280	0.671	0.544	0.553
Back of Queue (*Q*), ft/ln (95 th percentile)	71.1	112	103.5	13.5	167.8	112.1	43.5	127.1	108.7	225.8	257.3	239.1
Back of Queue (*Q*), veh/ln (95 th percentile)	2.7	4.3	4.1	0.5	6.5	4.5	1.7	4.9	4.3	9.0	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	12.4	8.1	8.1	5.6	10.3	7.8	42.6	32.1	32.2	42.1	34.8	34.9
Incremental Delay (d_2), s/veh	1.0	0.4	0.5	0.3	0.5	0.6	0.2	0.1	0.1	1.0	0.4	0.4
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	13.4	8.5	8.6	5.9	10.8	8.4	42.8	32.2	32.3	43.1	35.1	35.3
Level of Service (LOS)	B	A	A	A	B	A	D	C	C	D	D	D
Approach Delay, s/veh / LOS	9.4	A		9.4	A		33.6	C		37.4	D	
Intersection Delay, s/veh / LOS	21.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.2	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.4	C	3.3	C	2.7	C	3.0	C

HCS7 Signalized Intersection Results Summary

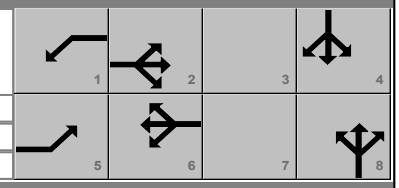
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	Build AM.xus		
Project Description	Build AM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	3	462	226	657	480	3	248	8	637	2	0	1

Signal Information			
Cycle, s	110.0	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	1.0	6.0	55.5	27.5	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



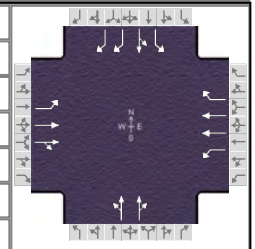
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	6.0	60.5	17.0	71.4		32.5		32.5
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		11.0			25.7		2.1
Green Extension Time (g_e), s	0.0	0.0	1.0	0.0		1.8		2.3
Phase Call Probability	0.08		1.00			1.00		1.00
Max Out Probability	0.00		0.01			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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	3	349	314	542	210	188		256	637		3	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1623	1675	1841	1653		1427	1425		1541	
Queue Service Time (g_s), s	0.1	13.2	11.0	9.0	8.7	8.6		17.9	23.7		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	13.2	11.0	9.0	8.7	8.6		18.0	23.7		0.1	
Green Ratio (*g/C*)	0.51	0.50	0.50	0.63	0.60	0.60		0.25	0.25		0.25	
Capacity (*c*), veh/h	587	921	818	1070	1112	998		422	713		440	
Volume-to-Capacity Ratio (*X*)	0.005	0.379	0.384	0.506	0.189	0.189		0.607	0.893		0.007	
Back of Queue (*Q*), ft/ln (95 th percentile)	1.5	242.6	170.4	70.7	119.7	104.8		259.5	345.5		2.7	
Back of Queue (*Q*), veh/ln (95 th percentile)	0.1	9.3	6.8	2.7	4.6	4.2		10.2	13.8		0.1	
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	
Uniform Delay (d_1), s/veh	13.1	17.3	13.0	8.6	16.9	16.8		37.7	39.8		31.0	
Incremental Delay (d_2), s/veh	0.0	1.1	1.3	0.0	0.0	0.0		0.5	9.1		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	
Control Delay (*d*), s/veh	13.1	18.4	14.2	8.7	16.9	16.8		38.2	48.9		31.0	
Level of Service (LOS)	B	B	B	A	B	B		D	D		C	
Approach Delay, s/veh / LOS	16.4	B		12.1	B		45.8	D		31.0	C	
Intersection Delay, s/veh / LOS	25.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	4.0	D	2.2	B	3.3	C	3.4	C
Bicycle LOS Score / LOS	3.1	C	3.5	D	4.0	D	2.4	B

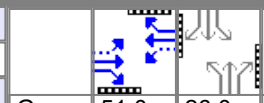
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build AM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	Build AM.xus		
Project Description	Build AM				

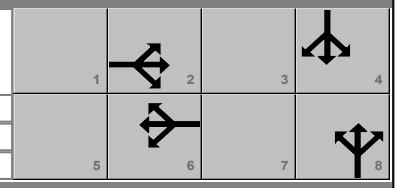


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	571	499	19	57	253	381	22	449	60	487	256	855

Signal Information			
Cycle, s	110.0	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	51.0	26.0	18.0	0.0	0.0	0.0						
Yellow	4.0	4.0	4.0	0.0	0.0	0.0						
Red	1.0	1.0	1.0	0.0	0.0	0.0						



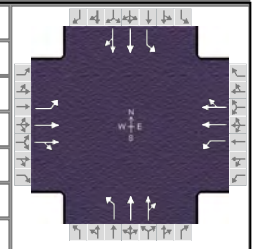
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		12.0		9.0
Phase Duration, s		56.0		56.0		23.0		31.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (g_s), s						18.1		28.0
Green Extension 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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	569	259	257	57	253	381	282		249	487	256	855
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1144	1900	1875	899	1809	1449	1893		1821	1810	1900	1425
Queue Service Time (g_s), s	46.6	12.2	11.9	4.8	4.4	21.0	16.1		14.6	26.0	13.1	26.0
Cycle Queue Clearance Time (g_c), s	51.0	12.2	11.9	17.0	4.4	21.0	16.1		14.6	26.0	13.1	26.0
Green Ratio (*g/C*)	0.46	0.46	0.46	0.46	0.46	0.46	0.16		0.16	0.24	0.24	0.24
Capacity (*c*), veh/h	550	881	869	383	1677	672	310		298	428	449	674
Volume-to-Capacity Ratio (*X*)	1.034	0.294	0.295	0.149	0.151	0.567	0.911		0.835	1.139	0.570	1.269
Back of Queue (*Q*), ft/ln (95 th percentile)	1018.5	241.2	231.9	49	81.9	296	404.3		317.6	1498.9	252.3	1929.1
Back of Queue (*Q*), veh/ln (95 th percentile)	40.7	9.6	9.3	2.0	3.3	11.8	16.2		12.7	60.0	10.1	77.2
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
Uniform Delay (d_1), s/veh	37.3	26.9	25.9	24.6	17.0	21.5	45.2		44.6	42.0	37.1	42.0
Incremental Delay (d_2), s/veh	106.6	0.7	0.7	0.8	0.2	3.5	39.8		20.0	280.3	1.1	496.9
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
Control Delay (*d*), s/veh	143.9	27.6	26.6	25.4	17.2	25.0	85.0		64.6	322.3	38.2	538.9
Level of Service (LOS)	F	C	C	C	B	C	F		E	F	D	F
Approach Delay, s/veh / LOS	88.3	F		22.2	C		75.4	E		392.7	F	
Intersection Delay, s/veh / LOS	199.4						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.4	C	3.2	C	3.2	C
Bicycle LOS Score / LOS	3.5	C	3.0	C	2.5	C	5.3	E

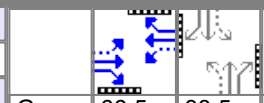
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	Dale Street	File Name	Build PM.xus		
Project Description	Build PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	160	378	53	52	520	297	48	385	51	166	301	101

Signal Information			
Cycle, s	110.0	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



							1	2	3	4
Green	66.5	33.5	0.0	0.0	0.0	0.0	5	6	7	8
Yellow	4.0	4.0	0.0	0.0	0.0	0.0				
Red	1.0	1.0	0.0	0.0	0.0	0.0				

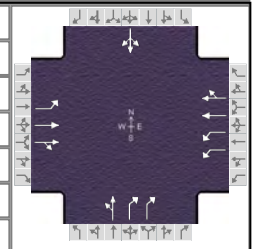
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		6.0		6.0		6.0
Phase Duration, s		71.5		71.5		38.5		38.5
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.3		3.3
Queue Clearance Time (g_s), s						16.5		31.5
Green Extension Time (g_e), s		0.0		0.0		2.3		2.0
Phase Call Probability						1.00		1.00
Max Out Probability						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	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	160	219	212	47	391	346	48	233	203	166	207	195
Adjusted Saturation Flow Rate (*s*), veh/h/ln	681	1811	1733	972	1841	1615	952	1841	1585	960	1841	1684
Queue Service Time (g_s), s	17.2	6.0	6.1	1.2	12.3	9.6	4.6	11.1	11.3	18.3	9.7	10.0
Cycle Queue Clearance Time (g_c), s	29.7	6.0	6.1	7.6	12.3	9.6	14.5	11.1	11.3	29.5	9.7	10.0
Green Ratio (*g/C*)	0.60	0.60	0.60	0.60	0.60	0.60	0.30	0.30	0.30	0.30	0.30	0.30
Capacity (*c*), veh/h	400	1096	1049	599	1114	978	269	560	482	260	560	512
Volume-to-Capacity Ratio (*X*)	0.400	0.200	0.202	0.078	0.351	0.354	0.179	0.416	0.422	0.639	0.370	0.381
Back of Queue (*Q*), ft/ln (50 th percentile)	77.3	60.3	55.9	6.6	127.4	77.2	27.7	124.1	105.1	108.2	108.4	99.5
Back of Queue (*Q*), veh/ln (50 th percentile)	2.9	2.3	2.2	0.3	4.9	3.1	1.1	4.8	4.2	4.3	4.2	4.0
Queue Storage Ratio (*RQ*) (50 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	18.6	9.8	9.8	5.4	11.7	8.2	35.8	30.5	30.6	42.3	30.0	30.1
Incremental Delay (d_2), s/veh	3.0	0.4	0.4	0.2	0.8	0.9	0.1	0.2	0.2	1.0	0.2	0.2
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	0.0	0.0
Control Delay (*d*), s/veh	21.6	10.2	10.2	5.6	12.5	9.1	35.9	30.7	30.8	43.3	30.2	30.3
Level of Service (LOS)	C	B	B	A	B	A	D	C	C	D	C	C
Approach Delay, s/veh / LOS	13.3	B		10.6	B		31.2	C		34.1	C	
Intersection Delay, s/veh / LOS	20.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.1	C	3.3	C	3.3	C	3.1	C
Bicycle LOS Score / LOS	3.3	C	3.4	C	2.9	C	2.9	C

HCS7 Signalized Intersection Results Summary

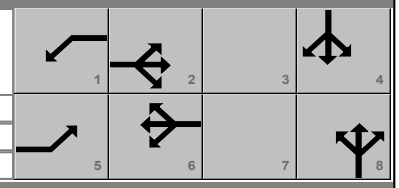
General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	S. Magnolia Street	File Name	Build PM.xus		
Project Description	Build PM				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	2	456	148	572	662	0	273	1	710	3	1	2

Signal Information			
Cycle, s	110.0	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	0.7	6.3	52.8	30.2	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



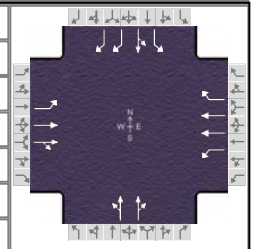
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6		8		4
Case Number	1.1	4.0	1.1	4.0		7.0		8.0
Phase Duration, s	5.7	57.8	17.0	69.1		35.2		35.2
Change Period, ($Y+R_c$), s	5.0	5.0	5.0	5.0		5.0		5.0
Max Allow Headway (*MAH*), s	3.1	0.0	3.1	0.0		3.2		3.2
Queue Clearance Time (g_s), s	2.1		8.8			28.5		2.3
Green Extension Time (g_e), s	0.0	0.0	0.8	0.0		1.7		2.6
Phase Call Probability	0.06		1.00			1.00		1.00
Max Out Probability	0.00		0.01			0.32		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	2	308	285	440	509	0		274	710		6	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	1810	1826	1673	1675	1749	1654		1415	1425		1618	
Queue Service Time (g_s), s	0.1	11.4	10.0	6.8	12.1	0.0		18.9	26.5		0.0	
Cycle Queue Clearance Time (g_c), s	0.1	11.4	10.0	6.8	12.1	0.0		19.2	26.5		0.3	
Green Ratio (*g/C*)	0.49	0.48	0.48	0.61	0.58	0.61		0.27	0.27		0.27	
Capacity (*c*), veh/h	488	877	803	1098	2039			453	782		493	
Volume-to-Capacity Ratio (*X*)	0.004	0.351	0.355	0.401	0.250	0.000		0.604	0.908		0.012	
Back of Queue (*Q*), ft/ln (50 th percentile)	0.6	123.9	90.6	48.4	137.2	0		164.7	257.1		2.9	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.0	4.8	3.6	1.8	5.3	0.0		6.5	10.3		0.1	
Queue Storage Ratio (*RQ*) (50 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	14.6	17.4	14.2	9.4	20.3			35.9	38.6		29.1	
Incremental Delay (d_2), s/veh	0.0	1.1	1.2	0.0	0.0	0.0		0.8	12.7		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	
Control Delay (*d*), s/veh	14.6	18.5	15.3	9.4	20.3			36.8	51.3		29.1	
Level of Service (LOS)	B	B	B	A	C			D	D		C	
Approach Delay, s/veh / LOS	16.9	B		15.3	B		47.2	D		29.1	C	
Intersection Delay, s/veh / LOS	28.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.9	D	2.1	B	3.3	C	3.5	C
Bicycle LOS Score / LOS	3.1	C	3.6	D	4.1	D	2.4	B

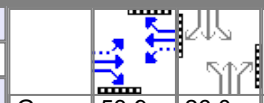
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	C&S Companies			Duration, h	1.00
Analyst	KAW	Analysis Date	12/18/2019	Area Type	Other
Jurisdiction		Time Period	Build PM	PHF	1.00
Urban Street	Commonwealth Avenue	Analysis Year	2022	Analysis Period	1> 7:00
Intersection	N. Gilbert St	File Name	Build PM.xus		
Project Description	Build PM				

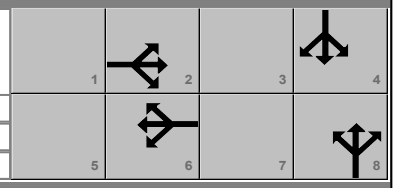


Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	687	409	42	93	464	534	33	347	44	461	292	720

Signal Information			
Cycle, s	110.0	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	53.9	26.0	15.1	0.0	0.0	0.0
Yellow	4.0	4.0	4.0	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		5.0		12.0		9.0
Phase Duration, s		58.9		58.9		20.1		31.0
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		5.0
Max Allow Headway (*MAH*), s		0.0		0.0		3.0		3.2
Queue Clearance Time (g_s), s						14.8		28.0
Green Extension Time (g_e), s		0.0		0.0		0.3		0.0
Phase Call Probability						1.00		1.00
Max Out Probability						0.88		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	701	233	227	93	464	534	224		200	461	292	720
Adjusted Saturation Flow Rate (*s*), veh/h/ln	943	1900	1838	947	1809	1449	1886		1828	1810	1900	1425
Queue Service Time (g_s), s	45.6	11.0	10.4	7.3	8.3	32.7	12.8		11.6	26.0	15.3	26.0
Cycle Queue Clearance Time (g_c), s	53.9	11.0	10.4	18.3	8.3	32.7	12.8		11.6	26.0	15.3	26.0
Green Ratio (*g/C*)	0.49	0.49	0.49	0.49	0.49	0.49	0.14		0.14	0.24	0.24	0.24
Capacity (*c*), veh/h	457	931	900	434	1773	710	259		251	428	449	674
Volume-to-Capacity Ratio (*X*)	1.534	0.250	0.252	0.214	0.262	0.752	0.866		0.796	1.078	0.650	1.069
Back of Queue (*Q*), ft/ln (50 th percentile)	3394.7	135.8	120.1	42.9	83.7	296.5	183.5		147.4	827.5	180.4	586.8
Back of Queue (*Q*), veh/ln (50 th percentile)	135.8	5.4	4.8	1.7	3.3	11.9	7.3		5.9	33.1	7.2	23.5
Queue Storage Ratio (*RQ*) (50 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	41.3	25.9	23.6	22.7	16.4	22.7	46.5		46.0	42.0	37.9	42.0
Incremental Delay (d_2), s/veh	969.6	0.5	0.5	1.1	0.4	7.6	20.6		10.6	184.4	2.6	156.7
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
Control Delay (*d*), s/veh	1010.9	26.4	24.1	23.8	16.8	30.2	67.1		56.5	226.4	40.5	198.7
Level of Service (LOS)	F	C	C	C	B	C	E		E	F	D	F
Approach Delay, s/veh / LOS	620.3	F		24.0	C		62.1	E		176.0	F	
Intersection Delay, s/veh / LOS	248.7						F					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	C	3.4	C	3.2	C	3.2	C
Bicycle LOS Score / LOS	3.5	C	3.3	C	2.4	B	5.1	E

Appendix C

Trip Generation Memo

2355 Northside Drive, Suite 350
San Diego, CA 92108
ph 619-296-9373 | f 619-296-5683

Memo

To: Mark Miller, PE

From: Kim Fabend, PE, PTOE, ENV SP

Date: November 15, 2019 – Revised November 19, 2019

Re: Fullerton Airport Terminal Expansion Traffic Analysis
Trip Generation & Distribution Assumptions

File: N60.001.006

This memo summarizes the proposed trip generation and distribution associated with the proposed terminal expansion project at Fullerton Airport and has been revised based on our conversation on November 18, 2019. The trip generation and distribution noted below is considered agreed upon and the study area to be evaluated includes the following:

- Commonwealth Avenue & Dale Street
- Commonwealth Avenue & North Magnolia Avenue
- Commonwealth Avenue & South Gilbert Street
- Commonwealth Avenue & the existing east driveway at the site
- Commonwealth Avenue & the proposed west driveway/South Edward Avenue

The project is a new 7,950 square foot (SF) building located at 4011 West Commonwealth Avenue. The first floor is expected to be an expansion of the existing terminal to accommodate existing staff and operations, therefore, there are no additional trips expected to be generated by this portion of the project. The second floor is expected to include three multi-purpose rooms totaling 1,660 SF that would be available for rent for meetings and/or events. This area of the project is expected to generate additional traffic when the rooms are rented. See attached site & building plans for reference.

As rentable space, the trip generation associated with these rooms will not be consistent and could vary depending upon the number of rooms rented at once and at what time events occur throughout the day. To be conservative, it will be assumed that the entire area is rented (1,660 SF) and the timing of any event(s)

would coincide with the rooms filling and emptying during both the AM and PM peak hours of the surrounding roadway network.

Trip Generation

Two methodologies were considered to estimate how many additional trips the multi-purpose rooms may generate: Institute of Transportation Engineers' (ITE) Trip Generation Manual, 10th Edition and trip estimates based on estimated parking demand in the December 2018 Parking Management Study for the same project.

- ITE Trip Generation Manual

  There are no land use codes in the manual that directly correlate to the proposed use of these multi-purpose, rentable rooms. The anticipated use would be closest to an office space, but at 1,660 SF, it is much smaller than the average sites used to estimate trips from Land Use Code 710 – General Office Building or do not fit the use for others like medical-dental offices or government offices. The closest land use code would be 712 – Small Office Building, but the rates and equations for this land use code would estimate only 3-6 total vehicle trips during peak hours for 1,660 SF of space.

- Estimate based on Parking Management Study

  In December 2018, a Parking Management Study was conducted and approved by the City of Fullerton to ensure that the proposed site plan and new parking layout would accommodate the proposed project. The parking demand associated with the new multi-purpose rooms were estimated based on municipal code requirements for the number of spaces needed based on the proposed space. The study identified that 'there is no clear definition in the Fullerton Municipal Code for "multi-purpose room", the Planning Department advised to follow the same guidelines for a public assembly room, 1 parking stall for every 3 fixed seats, with the additional guideline of 1 fixed seat per every 15 square feet.'

  Based on these guidelines and 1,660 SF of new space, there would be 111 new seats which would require 37 parking stalls. It could further be assumed that those 37 parked vehicles would correlate to the number of new trips to and from the proposed project.

The estimate of new trips based on the ITE Trip Generation Manual is too low assuming the three rooms are rented at once. Therefore, the estimate of trips based on the number of parking stalls required for the space based on municipal code will be used.

As noted previously, it will be assumed that the entire multi-purpose room space is rented and the timing of the event(s) will result in all visitors in and out during the AM and PM peak hours of the surrounding area as summarized in the table below:

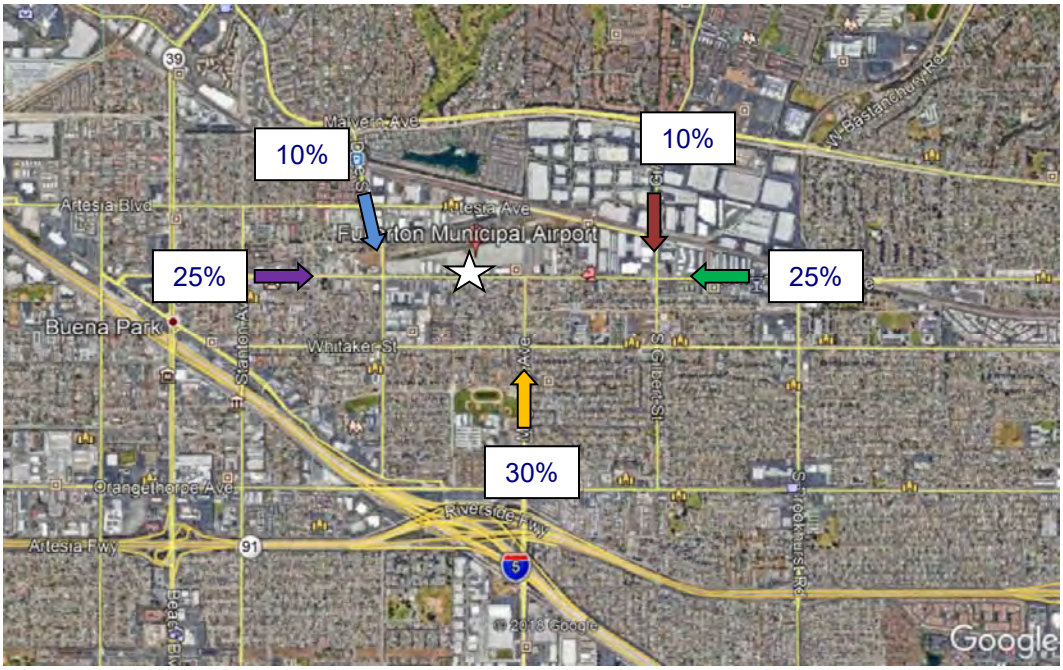
Table 1 - Estimated Trip Generation

Development Area	Total New Trips	Total Entering Trips	Total Exiting Trips
1,660 SF	74	37	37

Trip Distribution

The trips associated with the multi-purpose rooms would not necessarily follow existing traffic patterns during peak hours since they are not necessarily associated with typical commuter traffic. Access to the site is via two driveways on West Commonwealth Avenue between Dale Street and Magnolia Avenue. Based on your feedback and given the location of the project and the roadway network, the following assumptions are made regarding general distribution and routing:

- 20% from the north: traffic would travel to/from Dale Street from the northwest (10%) and to/from Gilbert Street from the northeast (10%)
- 25% from the east: traffic would travel along West Commonwealth Avenue through the intersection at Dale Street
- 30% from the south: traffic would travel to/from Magnolia Avenue
- 25% from the west: traffic would travel along West Commonwealth Avenue through the intersection at Magnolia Avenue



Some traffic may travel to/from the project from more local areas just south of the Airport using South Gilbert Street, Dale Street, or other local roads. To be

conservative, the further distribution of trips among additional routes was not considered. More detailed distribution will be considered once turning movement counts have been conducted and evaluated at the study intersections.

The distribution of entering trips is shown in the graphic below based on a total of 37 entering trips and the distribution percentages shown above. The exiting trips would flow in the opposite direction via the same routes.

As stated previously, the trip generation estimated here assumes that all three of the multi-purpose areas are fully occupied and that all trips associated with them are traveling to and from the site during the peak hours. This is highly unlikely, but a conservative estimate to evaluate potential impacts to the proposed project.

Based on the trip generation, distribution, and study area noted in this memo, traffic counts will be collected and the analysis of the study intersections will progress. You will be provided with the stand alone traffic analysis document for your review. Thank you for your assistance and cooperation.

Appendix D

Traffic Counts

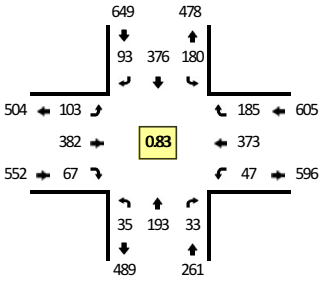
Type of peak hour being reported: System Peak

Method for determining peak hour: Total Entering Volume

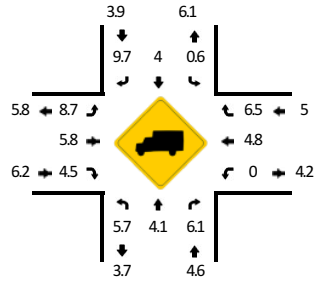
LOCATION: Commonwealth Ave -- Dale St
CITY/STATE: Buena Park, CA

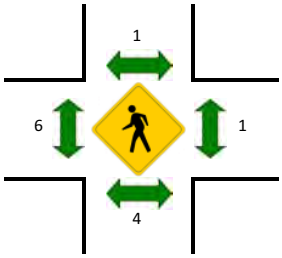
QC JOB #: 15133701
DATE: Tue, Dec 10 2019

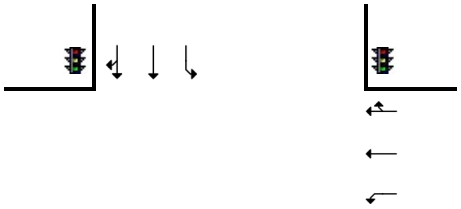
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

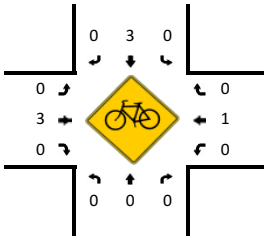


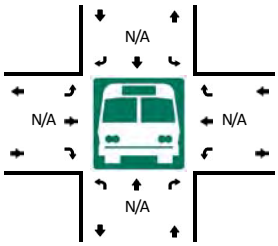
Quality Counts
DATA THAT DRIVES COMMUNITIES

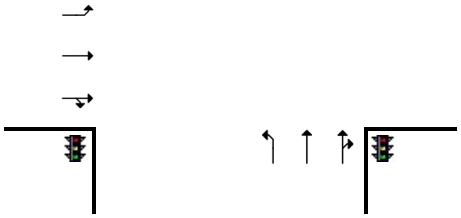


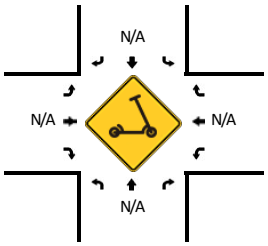












15-Min Count Period Beginning At	Commonwealth Ave (Northbound)				Commonwealth Ave (Southbound)				Dale St (Eastbound)				Dale St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	34	1	0	28	68	19	0	13	63	12	0	10	62	25	0	339	
7:15 AM	4	51	9	0	34	68	17	0	17	83	13	0	11	80	25	1	413	
7:30 AM	8	51	9	0	57	109	20	0	24	113	16	1	6	89	48	0	551	
7:45 AM	11	47	8	0	49	102	23	0	37	110	22	2	17	130	67	0	625	1928
8:00 AM	12	44	7	0	40	97	33	0	22	76	16	0	12	74	45	0	478	2067
8:15 AM	5	31	8	0	37	73	24	0	12	51	6	0	5	83	26	1	362	2016
8:30 AM	6	36	10	0	30	70	29	0	21	57	5	1	13	85	32	0	395	1860
8:45 AM	8	26	9	0	34	59	15	0	14	68	10	0	5	104	30	0	382	1617

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	44	188	32	0	196	408	92	0	148	440	88	8	68	520	268	0	2500
Heavy Trucks	0	8	0		0	0	8		20	24	4		0	16	12		92
Buses																	
Pedestrians		8				0				4				0			12
Bicycles	0	0	0		0	1	0		0	0	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/12/2019 2:00 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

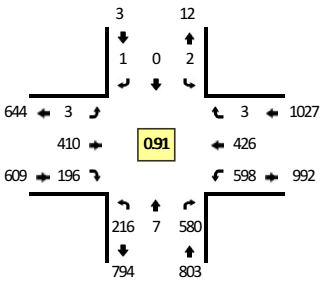
Type of peak hour being reported: System Peak

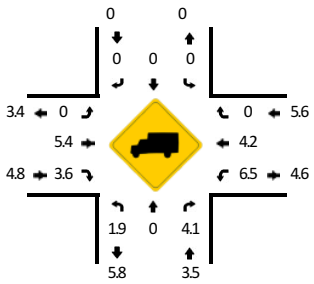
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- Magnolia Ave
CITY/STATE: Fullerton, CA

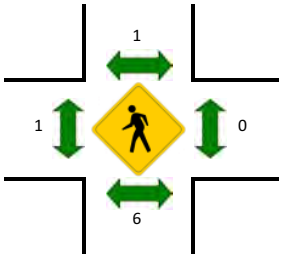
QC JOB #: 15133703
DATE: Thu, Dec 5 2019

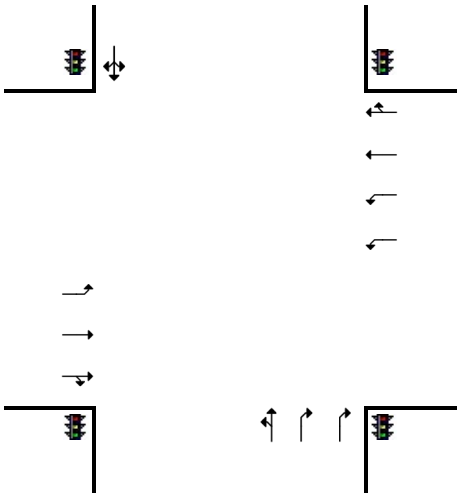
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

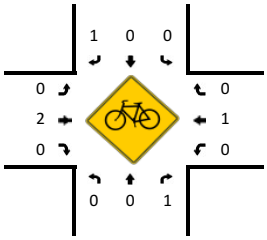


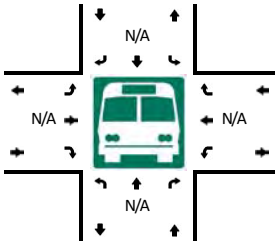


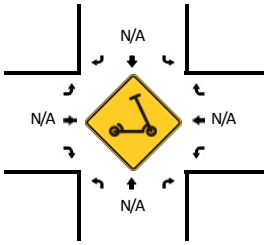
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				Magnolia Ave (Eastbound)				Magnolia Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	20	0	112	0	0	0	0	0	0	85	27	0	133	76	0	0	453	
7:15 AM	47	1	142	0	0	0	0	0	0	98	37	0	159	95	0	0	579	
7:30 AM	33	1	136	0	1	0	0	0	0	112	59	0	149	106	1	0	598	
7:45 AM	74	2	156	0	0	0	0	0	1	99	62	1	150	123	1	0	669	2299
8:00 AM	62	3	146	0	1	0	1	0	1	101	38	0	140	102	1	0	596	2442
8:15 AM	55	2	143	0	0	1	0	0	0	78	34	0	136	91	1	0	541	2404
8:30 AM	42	0	117	0	0	0	0	0	0	80	46	0	148	74	0	0	507	2313
8:45 AM	37	1	106	0	0	0	0	0	0	64	24	0	128	112	3	0	475	2119

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	296	8	624	0	0	0	0	0	4	396	248	4	600	492	4	0	2676
Heavy Trucks	4	0	28		0	0	0		0	16	16		36	12	0		112
Buses																	
Pedestrians		8				4				0				0			12
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/12/2019 2:00 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

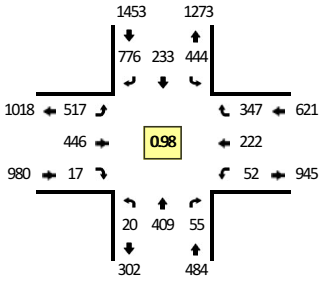
Type of peak hour being reported: System Peak

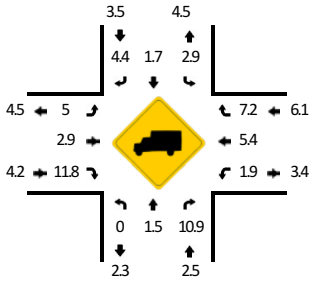
Method for determining peak hour: Total Entering Volume

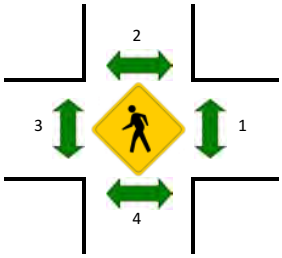
LOCATION: N Gilbert St -- W Commonwealth Ave
CITY/STATE: Fullerton, CA

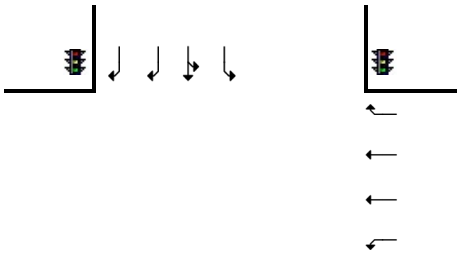
QC JOB #: 15133705
DATE: Tue, Dec 10 2019

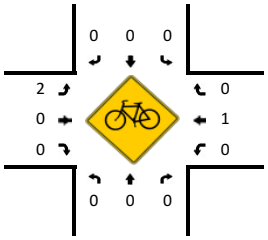
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

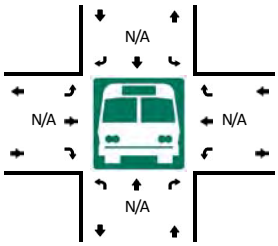


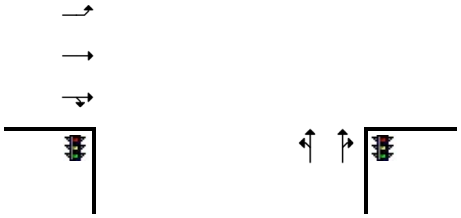


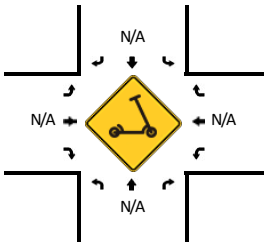












15-Min Count Period Beginning At	N Gilbert St (Northbound)				N Gilbert St (Southbound)				W Commonwealth Ave (Eastbound)				W Commonwealth Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	5	55	11	0	96	36	163	0	135	68	4	0	4	52	79	0	708	
7:15 AM	2	126	7	0	108	54	182	0	130	101	5	0	5	50	89	0	859	
7:30 AM	8	109	15	0	112	54	201	0	134	115	4	0	10	60	85	0	907	
7:45 AM	6	101	18	0	109	61	182	0	113	108	2	0	21	63	81	0	865	3339
8:00 AM	4	73	15	0	115	64	211	0	140	122	6	0	16	49	92	0	907	3538
8:15 AM	7	83	19	0	106	54	177	0	116	79	3	0	17	56	70	0	787	3466
8:30 AM	0	48	15	0	100	58	172	0	106	92	7	0	15	45	58	0	716	3275
8:45 AM	6	51	17	0	99	34	173	0	90	51	7	0	18	56	81	0	683	3093

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	436	60	0	448	216	804	0	536	460	16	0	40	240	340	0	3628
Heavy Trucks	0	12	8		24	0	20		24	20	4		0	8	20		140
Buses																	
Pedestrians		4				0				0				4			8
Bicycles	0	0	0		0	0	0		1	0	0		0	1	0		2
Scooters																	

Comments:

Report generated on 12/12/2019 2:00 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

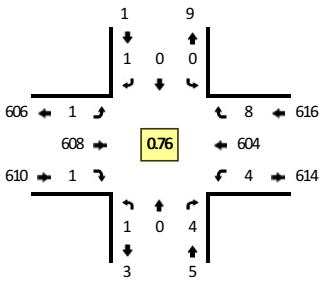
Type of peak hour being reported: System Peak

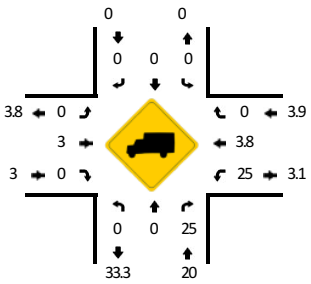
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- Turner Ave/East Driveaway
CITY/STATE: Fullerton, CA

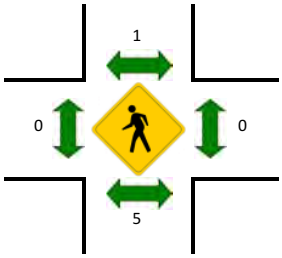
QC JOB #: 15133707
DATE: Tue, Dec 10 2019

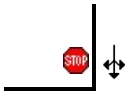
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

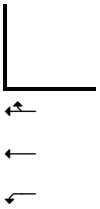


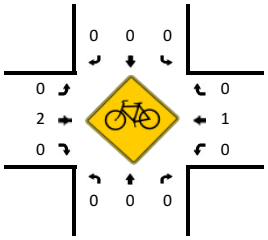


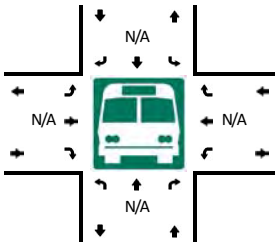
Quality Counts
DATA THAT DRIVES COMMUNITIES

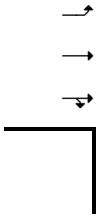


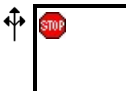


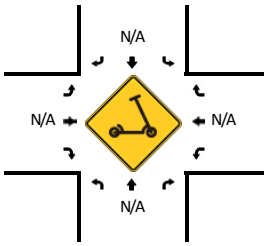












15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				Turner Ave/East Driveaway (Eastbound)				Turner Ave/East Driveaway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	0	1	0	0	0	0	0	1	101	0	0	1	98	3	0	206	
7:15 AM	0	0	2	0	0	0	1	0	0	131	0	0	0	112	3	0	249	
7:30 AM	0	0	0	0	0	0	0	0	0	171	0	0	0	138	1	1	311	
7:45 AM	1	0	1	0	0	0	0	0	0	181	0	0	1	217	3	0	404	1170
8:00 AM	0	0	1	0	0	0	0	0	1	125	1	0	1	137	1	1	268	1232
8:15 AM	1	0	0	0	1	0	0	0	0	103	0	0	0	121	0	0	226	1209
8:30 AM	2	0	2	0	0	0	0	0	0	94	0	0	0	124	1	0	223	1121
8:45 AM	0	0	3	0	1	0	0	0	0	105	1	0	2	141	1	0	254	971

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	4	0	0	0	0	0	0	724	0	0	4	868	12	0	1616
Heavy Trucks	0	0	0		0	0	0		0	24	0		0	20	0		44
Buses																	
Pedestrians		16				0				0				0			16
Bicycles	0	0	0		0	0	0		0	1	0		0	0	0		1
Scooters																	

Comments:

Report generated on 12/12/2019 2:00 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

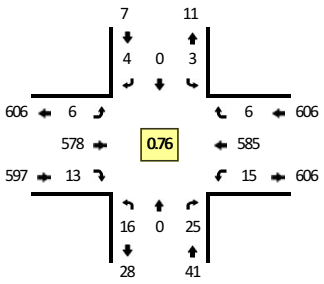
Type of peak hour being reported: System Peak

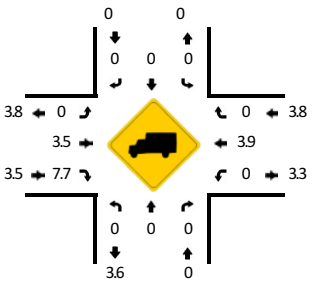
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- S Edward Ave/West Driveway
CITY/STATE: Fullerton, CA

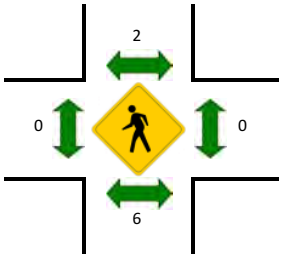
QC JOB #: 15133709
DATE: Tue, Dec 10 2019

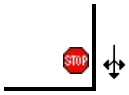
Peak-Hour: 7:15 AM -- 8:15 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

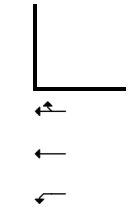


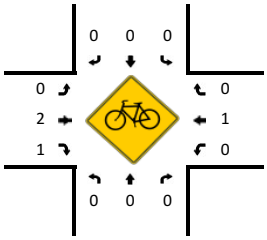


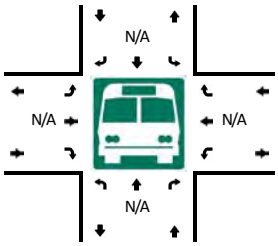
Quality Counts
DATA THAT DRIVES COMMUNITIES

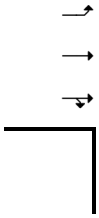


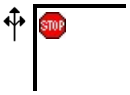


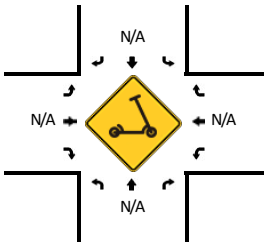












15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				S Edward Ave/West Driveway (Eastbound)				S Edward Ave/West Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	5	0	0	0	0	0	1	95	0	0	3	95	2	0	204	
7:15 AM	2	0	9	0	0	0	0	0	2	120	1	1	1	107	0	0	243	
7:30 AM	4	0	4	0	1	0	1	0	1	169	4	0	3	138	0	0	325	
7:45 AM	8	0	7	0	0	0	1	0	1	169	5	0	6	210	3	0	410	1182
8:00 AM	2	0	5	0	2	0	2	0	1	120	3	0	5	130	3	0	273	1251
8:15 AM	3	0	3	0	2	0	1	0	1	96	1	0	2	118	1	0	228	1236
8:30 AM	6	0	2	0	3	0	2	0	1	92	0	0	1	125	1	0	233	1144
8:45 AM	2	0	1	0	0	0	0	0	2	104	4	0	0	139	2	0	254	988

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	32	0	28	0	0	0	4	0	4	676	20	0	24	840	12	0	1640
Heavy Trucks	0	0	0		0	0	0		0	24	4		0	16	0		44
Buses																	
Pedestrians		20				4				0				0			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/12/2019 2:00 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

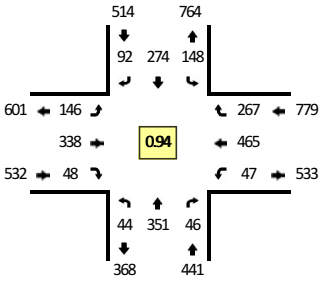
Type of peak hour being reported: System Peak

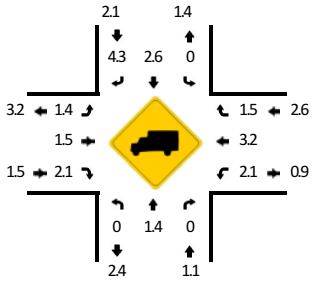
Method for determining peak hour: Total Entering Volume

LOCATION: Commonwealth Ave -- Dale St
CITY/STATE: Buena Park, CA

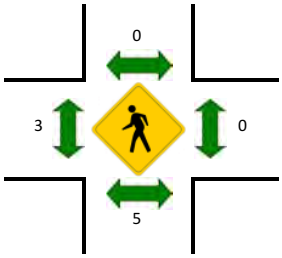
QC JOB #: 15133702
DATE: Tue, Dec 10 2019

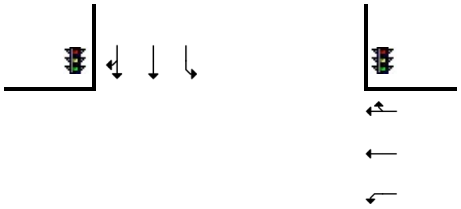
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:30 PM -- 5:45 PM

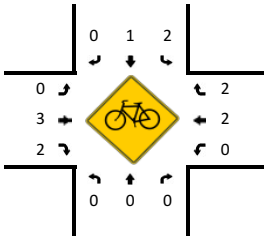


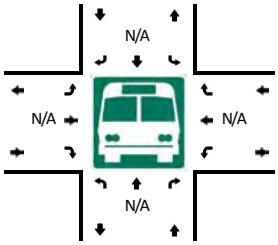


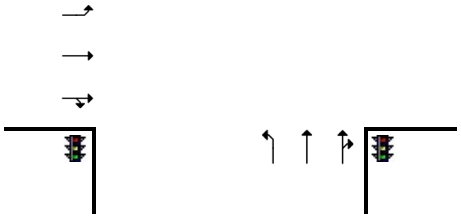
Quality Counts
DATA THAT DRIVES COMMUNITIES

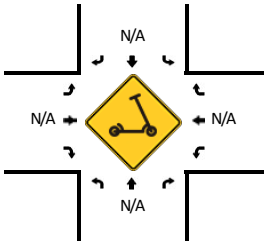












15-Min Count Period Beginning At	Commonwealth Ave (Northbound)				Commonwealth Ave (Southbound)				Dale St (Eastbound)				Dale St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	66	13	0	37	58	25	0	29	85	12	0	9	88	62	0	491	
4:15 PM	7	56	10	0	32	59	23	0	21	98	12	0	9	100	54	0	481	
4:30 PM	16	82	4	0	45	58	22	0	36	79	16	0	11	119	47	1	536	
4:45 PM	8	86	9	0	42	73	31	0	24	77	10	0	13	106	52	0	531	2039
5:00 PM	13	77	12	0	50	62	22	0	24	83	13	0	12	113	66	0	547	2095
5:15 PM	14	91	11	0	23	70	26	0	34	84	11	0	10	127	83	0	584	2198
5:30 PM	9	97	14	0	33	69	13	0	64	94	14	0	11	119	66	1	604	2266
5:45 PM	12	107	13	0	28	55	23	0	51	85	8	0	19	98	53	0	552	2287

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	388	56	0	132	276	52	0	256	376	56	0	44	476	264	4	2416
Heavy Trucks	0	0	0		0	8	0		0	4	0		4	28	4		48
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		1	0	0		0	0	0		0	1	1		3
Scooters																	

Comments:

Report generated on 12/12/2019 2:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

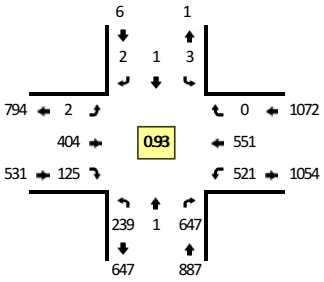
Type of peak hour being reported: System Peak

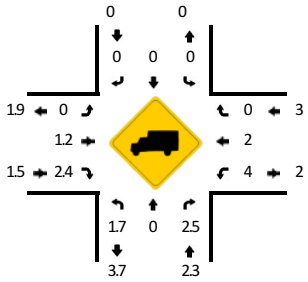
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- Magnolia Ave
CITY/STATE: Fullerton, CA

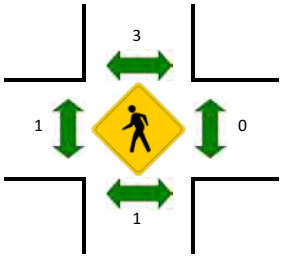
QC JOB #: 15133704
DATE: Thu, Dec 5 2019

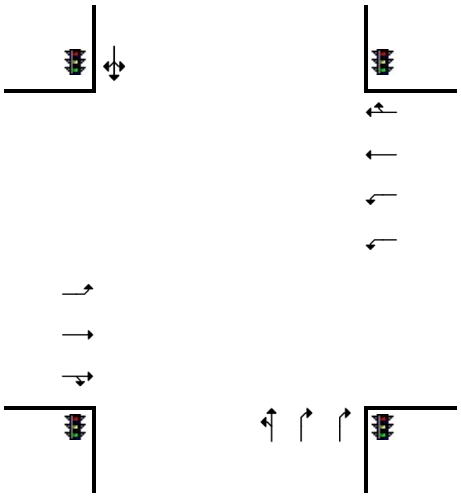
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

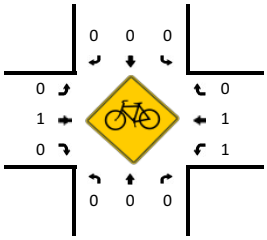


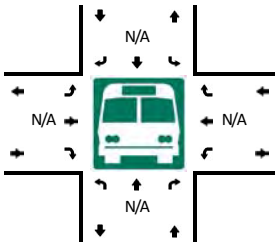


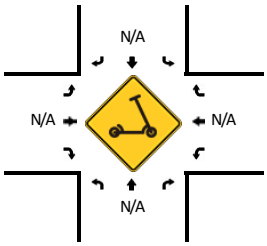
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				Magnolia Ave (Eastbound)				Magnolia Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	32	0	178	0	0	1	0	0	1	109	27	0	156	121	1	0	626	
4:15 PM	64	0	154	0	2	1	0	0	0	95	30	0	130	133	0	0	609	
4:30 PM	59	1	150	0	0	2	0	0	0	92	33	0	133	131	0	0	601	
4:45 PM	67	0	157	0	1	1	0	0	0	101	29	0	117	142	0	0	615	2451
5:00 PM	59	0	189	0	0	0	1	0	0	93	31	0	155	146	0	0	674	2499
5:15 PM	66	1	141	0	1	0	1	0	0	114	35	1	133	152	0	0	645	2535
5:30 PM	47	0	160	0	1	0	0	0	0	96	30	1	116	111	0	0	562	2496
5:45 PM	53	0	144	0	1	1	1	0	2	111	32	0	101	146	1	0	593	2474

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	236	0	756	0	0	0	4	0	0	372	124	0	620	584	0	0	2696
Heavy Trucks	12	0	20		0	0	0		0	4	0		12	16	0		64
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/12/2019 2:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

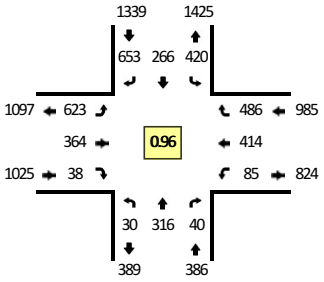
Type of peak hour being reported: System Peak

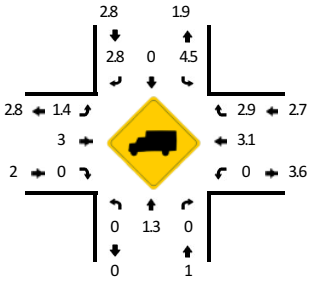
Method for determining peak hour: Total Entering Volume

LOCATION: N Gilbert St -- W Commonwealth Ave
CITY/STATE: Fullerton, CA

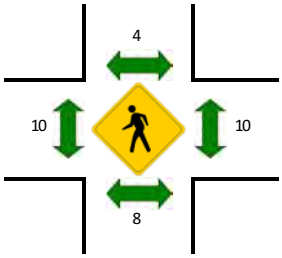
QC JOB #: 15133706
DATE: Tue, Dec 10 2019

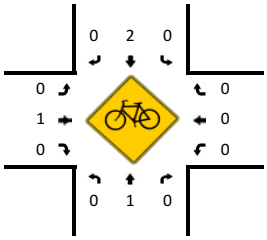
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

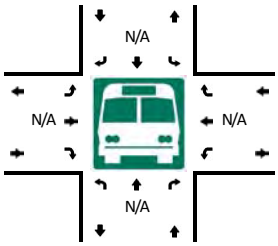


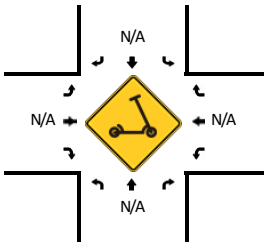


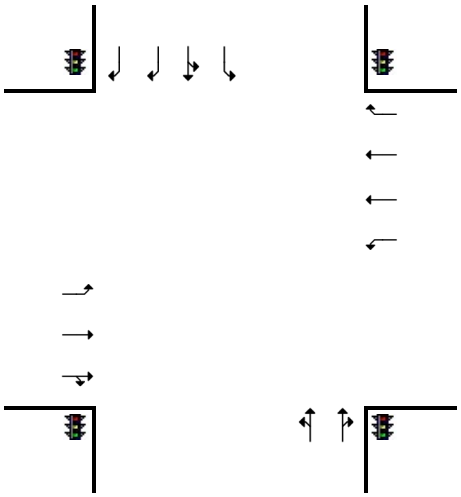
Quality Counts
DATA THAT DRIVES COMMUNITIES











15-Min Count Period Beginning At	N Gilbert St (Northbound)				N Gilbert St (Southbound)				W Commonwealth Ave (Eastbound)				W Commonwealth Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	88	14	0	97	62	167	0	148	102	5	0	19	86	124	0	916	
4:15 PM	6	68	11	0	108	68	169	0	160	101	8	0	21	105	133	0	958	
4:30 PM	6	78	12	0	98	69	146	0	132	97	10	0	14	81	120	0	863	
4:45 PM	7	70	14	0	95	75	154	0	140	101	7	0	24	106	117	0	910	3647
5:00 PM	5	78	5	0	103	61	201	0	148	84	9	0	23	99	126	0	942	3673
5:15 PM	6	83	11	0	118	62	174	0	176	82	13	0	21	112	113	0	971	3686
5:30 PM	12	85	10	0	104	68	124	0	159	97	9	0	17	97	130	0	912	3735
5:45 PM	7	81	8	0	98	69	157	0	156	83	8	0	18	73	124	0	882	3707

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	332	44	0	472	248	696	0	704	328	52	0	84	448	452	0	3884
Heavy Trucks	0	4	0		16	0	20		12	12	0		0	0	4		68
Buses																	
Pedestrians		0				4				4				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/12/2019 2:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

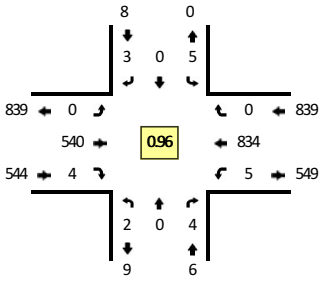
Type of peak hour being reported: System Peak

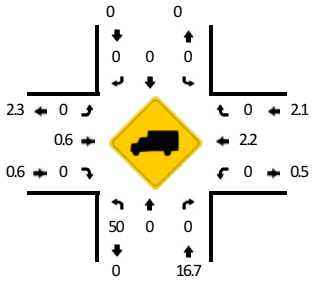
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- Turner Ave/East Driveaway
CITY/STATE: Fullerton, CA

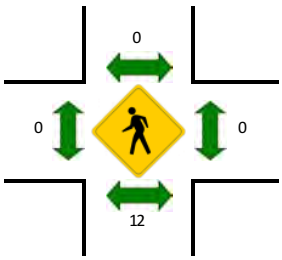
QC JOB #: 15133708
DATE: Tue, Dec 10 2019

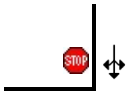
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

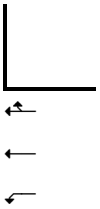


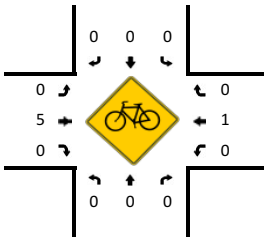


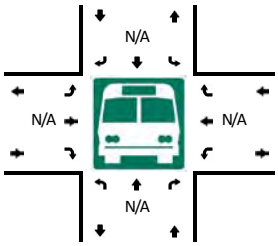
Quality Counts
DATA THAT DRIVES COMMUNITIES

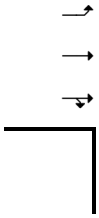


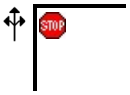


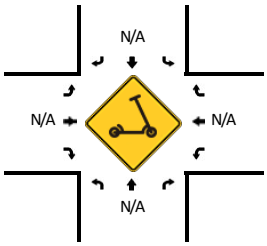












15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				Turner Ave/East Driveaway (Eastbound)				Turner Ave/East Driveaway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	2	0	1	0	0	0	0	138	1	0	1	159	0	0	303	
4:15 PM	0	0	1	0	0	0	0	0	0	131	0	0	1	157	0	0	290	
4:30 PM	1	0	1	0	0	0	0	0	0	127	0	0	2	178	2	0	311	
4:45 PM	0	0	2	0	1	0	0	0	0	129	0	0	0	185	0	0	317	1221
5:00 PM	1	0	1	0	3	0	1	0	0	148	2	0	2	207	0	0	365	1283
5:15 PM	1	0	1	0	0	0	0	0	0	121	1	0	2	237	0	0	363	1356
5:30 PM	0	0	0	0	1	0	2	0	0	142	1	0	1	205	0	0	352	1397
5:45 PM	1	0	2	0	0	1	1	0	0	111	2	1	1	171	0	0	291	1371

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	4	0	12	0	4	0	0	592	8	0	8	828	0	0	1460
Heavy Trucks	4	0	0		0	0	0		0	12	0		0	4	0		20
Buses																	
Pedestrians		16				0				0				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/12/2019 2:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

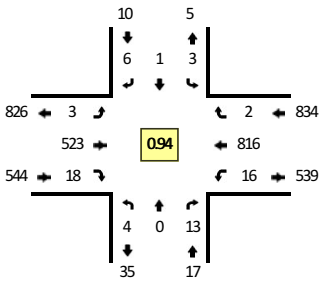
Type of peak hour being reported: System Peak

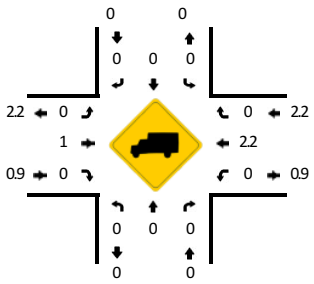
Method for determining peak hour: Total Entering Volume

LOCATION: W Commonwealth Ave -- S Edward Ave/West Driveway
CITY/STATE: Fullerton, CA

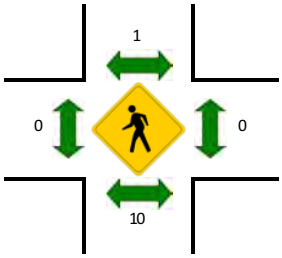
QC JOB #: 15133710
DATE: Tue, Dec 10 2019

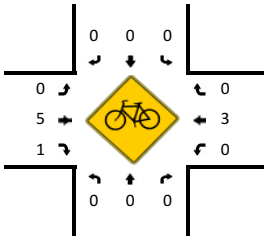
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

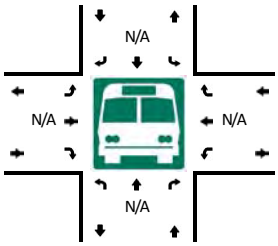


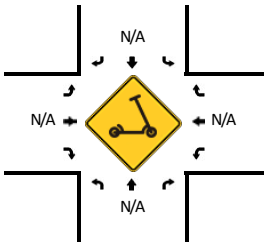


Quality Counts
DATA THAT DRIVES COMMUNITIES









15-Min Count Period Beginning At	W Commonwealth Ave (Northbound)				W Commonwealth Ave (Southbound)				S Edward Ave/West Driveway (Eastbound)				S Edward Ave/West Driveway (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	0	0	0	0	0	1	0	0	139	4	0	1	159	0	0	305	
4:15 PM	2	0	3	0	2	0	0	0	1	128	3	0	5	151	1	0	296	
4:30 PM	2	0	3	0	3	0	1	0	2	121	4	0	8	168	1	1	314	
4:45 PM	1	0	4	0	0	0	1	0	0	123	2	0	3	178	0	0	312	1227
5:00 PM	1	0	4	0	2	0	4	0	1	143	6	0	6	206	0	0	373	1295
5:15 PM	1	0	0	0	1	1	0	0	1	120	5	0	4	231	1	0	365	1364
5:30 PM	1	0	5	0	0	0	1	0	1	137	5	0	3	201	1	0	355	1405
5:45 PM	6	0	3	0	0	0	1	0	1	113	7	0	3	167	3	0	304	1397

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	16	0	8	0	16	0	4	572	24	0	24	824	0	0	1492
Heavy Trucks	0	0	0		0	0	0		0	16	0		0	4	0		20
Buses																	
Pedestrians		12				4				0				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 12/12/2019 2:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix E

Level of Service Tables

Table 7: No Build Pedestrian and Bicyclist LOS

Approach	AM				PM			
	No Build		Build		No Build		Build	
	Pedestrian	Bicyclist	Pedestrian	Bicyclist	Pedestrian	Bicyclist	Pedestrian	Bicyclist
	LOS (Value)				**LOS (Value)**			
Commonwealth Avenue & Dale Street								
EB	C (3.1)	C (3.4)	C (3.1)	C (3.4)	C (3.1)	C (3.3)	C (3.1)	C (3.3)
WB	C (3.2)	C (3.3)	C (3.2)	C (3.3)	C (3.3)	C (3.4)	C (3.3)	C (3.4)
NB	C (3.3)	C (2.7)	C (3.3)	C (2.7)	C (3.3)	C (2.9)	C (3.3)	C (2.9)
SB	C (3.1)	C (3.0)	C (3.1)	C (3.0)	C (3.1)	C (2.9)	C (3.1)	C (2.9)
Commonwealth Avenue & North Magnolia Avenue								
EB	D (4.0)	C (3.1)	D (4.0)	C (3.1)	D (3.9)	C (3.1)	D (3.9)	C (3.1)
WB	B (2.2)	D (3.5)	B (2.2)	D (3.5)	B (2.1)	D (3.6)	B (2.1)	D (3.6)
NB	C (3.3)	D (3.9)	C (3.3)	D (3.9)	C (3.3)	D (4.1)	C (3.3)	D (4.1)
SB	C (3.4)	B (2.4)	C (3.4)	B (2.4)	C (3.4)	B (2.4)	C (3.5)	B (2.4)
Commonwealth Avenue & Gilbert Street								
EB	C (2.5)	C (3.4)	C (2.5)	C (3.5)	C (2.5)	C (3.5)	C (2.5)	C (3.5)
WB	C (3.4)	C (3.0)	C (3.4)	C (3.0)	C (3.4)	C (3.3)	C (3.4)	C (3.3)
NB	C (3.2)	C (2.5)	C (3.2)	C (2.5)	C (3.2)	B (2.4)	C (3.2)	B (2.4)
SB	C (3.2)	E (5.3)	C (3.2)	E (5.3)	C (3.2)	E (5.1)	C (3.2)	E (5.1)

Table 1: Existing Vehicle LOS

Approach / Lane		AM		PM	
		Existing (2019)		**Existing (2019)**	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Dale Street					
EB	*Left*	B (14.1)	0.33	B (14.1)	0.41
	Thru/Right	A (9.5)	0.27	A (7.6)	0.19
WB	*Left*	B (10.7)	0.12	A (8.8)	0.09
	Thru/Right	A (8.7)	0.34	A (7.4)	0.37
NB	*Left*	C (25.0)	0.25	C (23.8)	0.21
	Thru/Right	C (20.0)	0.28	C (24.3)	0.47
SB	*Left*	D (36.7)	0.69	D (51.1)	0.77
	Thru/Right	C (24.5)	0.57	C (21.1)	0.44
	Intersection	B (16.7)	-	B (16.2)	-
Commonwealth Avenue & South Edward Avenue					
EB	*Thru/Right*	n/a	n/a	n/a	n/a
WB	*Left*	A (8.7)	0.016	A (8.6)	0.018
	Thru	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (12.4)	0.08	B (11.5)	0.032
	Intersection	B (12.4)	-	B (11.5)	-
Commonwealth Avenue & West Driveway					
EB	*Left*	A (8.9)	0.007	A (9.8)	0.004
	Thru	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (12.5)	0.016	B (13.6)	0.025
	Intersection	B (12.5)	-	B (13.6)	-
Commonwealth Avenue & East Driveway					
EB	*Left*	A (8.9)	0.001	-	-
	Thru	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (10.4)	0.002	C (15.7)	0.025
	Intersection	B (10.4)	-	C (15.7)	-

Table 1: Existing Vehicle LOS (Continued)

Approach / Lane		AM		PM	
		Existing (2019)		**Existing (2019)**	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Turner Avenue					
EB	*Thru/Right*	n/a	n/a	n/a	n/a
WB	*Left*	A (9.4)	0.005	A (8.6)	0.005
	Thru	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (11.6)	0.009	B (12.8)	0.013
	Intersection	B (11.6)	-	B (12.8)	-
Commonwealth Avenue & North Magnolia Avenue					
EB	*Left*	B (12.0)	0.01	B (11.5)	0.01
	Thru/Right	C (28.8)	0.59	C (26.2)	0.47
WB	*Left*	B (16.8)	0.69	B (14.4)	0.57
	Thru/Right	B (13.0)	0.25	B (13.9)	0.31
NB	*Left/Thru*	C (34.2)	0.53	C (33.2)	0.55
	Right	A (5.4)	0.60	A (6.1)	0.66
SB	*Left/Thru/Right*	A (0.0)	0.00	C (20.5)	0.01
	Intersection	B (17.9)	-	B (16.5)	-
Commonwealth Avenue & Gilbert Street					
EB	*Left*	E (61.3)	0.85	E (58.8)	0.85
	Left/Thru/Right	D (49.8)	0.84	D (49.7)	0.85
WB	*Left*	D (40.6)	0.17	D (42.4)	0.28
	Thru	D (42.3)	0.38	D (49.5)	0.70
	Right	B (19.2)	0.49	C (25.0)	0.67
NB	*Left/Right/Thru*	E (61.8)	0.88	D (53.9)	0.77
SB	*Left*	E (62.3)	0.86	E (65.7)	0.89
	Left/Thru	E (60.5)	0.85	E (61.3)	0.86
	Right	A (1.5)	0.46	A (1.3)	0.40
	Intersection	D (40.5)	-	D (41.6)	-

Table 2: Existing Pedestrian and Bicyclist LOS

Approach	AM		PM	
	Pedestrian	Bicyclist	Pedestrian	Bicyclist
	LOS (Value)		**LOS (Value)**	
Commonwealth Avenue & Dale Street				
EB	C (3.0)	C (3.3)	C (3.0)	C (3.3)
WB	C (3.2)	C (3.2)	C (3.3)	C (3.3)
NB	C (3.3)	C (2.7)	C (3.3)	C (2.8)
SB	C (3.1)	C (2.9)	C (3.1)	C (2.9)
Commonwealth Avenue & North Magnolia Avenue				
EB	D (3.9)	C (3.1)	D (3.8)	C (3.0)
WB	B (2.2)	C (3.4)	B (2.1)	C (3.5)
NB	C (3.2)	D (3.8)	C (3.3)	D (3.9)
SB	C (3.3)	B (2.4)	C (3.4)	B (2.4)
Commonwealth Avenue & Gilbert Street				
EB	C (2.5)	C (3.4)	C (2.5)	C (3.4)
WB	C (3.3)	C (2.9)	C (3.3)	C (3.2)
NB	C (3.2)	B (2.5)	C (3.2)	B (2.4)
SB	C (3.1)	E (5.1)	C (3.2)	E (4.9)

Table 3: No Build LOS

Approach / Lane		AM		PM	
		No-Build (2022)		**No-Build (2022)**	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Dale Street					
EB	*Left*	B (18.7)	0.41	C (20.4)	0.52
	Thru/Right	B (11.3)	0.31	A (9.0)	0.22
WB	*Left*	B (12.9)	0.14	B (10.5)	0.10
	Thru/Right	B (10.5)	0.39	A (9.1)	0.42
NB	*Left*	C (25.0)	0.28	C (23.1)	0.22
	Thru/Right	B (19.5)	0.28	C (23.6)	0.47
SB	*Left*	D (38.4)	0.73	E (55.6)	0.82
	Thru/Right	C (24.2)	0.58	C (20.8)	0.44
	Intersection	B (17.9)	-	B (17.6)	-
Commonwealth Avenue & South Edward Avenue					
EB	*Thru/Right*	n/a	n/a	n/a	n/a
WB	*Left*	A (8.9)	0.017	A (8.8)	0.021
	Thru	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (13.1)	0.093	B (11.8)	0.035
	Intersection	B (13.1)	-	B (11.8)	-
Commonwealth Avenue & West Driveway					
EB	*Left*	A (9.2)	0.009	B (10.3)	0.005
	Thru/Right	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (13.1)	0.017	B (14.3)	0.03
	Intersection	B (13.1)	-	B (14.3)	-
Commonwealth Avenue & East Driveway					
EB	*Left*	A (9.2)	0.009	-	-
	Thru/Right	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (10.7)	0.002	C (16.8)	0.028
	Intersection	B (10.7)	-	C (16.8)	-
Commonwealth Avenue & Turner Avenue					
EB	*Thru/Right*	n/a	n/a	n/a	n/a
WB	*Left*	A (9.7)	0.005	A (8.8)	0.005
	Thru	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (12.0)	0.01	B (13.4)	0.014
	Intersection	n/a	-	n/a	-

Table 3: No Build LOS (Continued)

Approach / Lane		AM		PM	
		No-Build (2022)		**No-Build (2022)**	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & North Magnolia Avenue					
EB	*Left*	B (12.0)	0.01	B (11.5)	0.01
	Thru/Right	C (32.0)	0.67	C (28.7)	0.53
WB	*Left*	C (21.7)	0.75	B (15.1)	0.63
	Thru/Right	B (12.9)	0.27	B (14.3)	0.36
NB	*Left/Thru*	D (37.5)	0.60	D (36.3)	0.62
	Right	A (5.1)	0.61	A (5.7)	0.66
SB	*Left/Thru/Right*	A (0.0)	0.00	C (21.3)	0.01
	Intersection	B (18.3)	-	B (17.4)	-
Commonwealth Avenue & Gilbert Street					
EB	*Left*	E (74.9)	0.94	E (70.4)	0.93
	Left/Thru/Right	E (58.3)	0.92	E (58.8)	0.93
WB	*Left*	D (40.9)	0.19	D (43.1)	0.31
	Thru	D (43.1)	0.42	D (53.5)	0.78
	Right	C (20.8)	0.54	C (28.5)	0.74
NB	*Left/Right/Thru*	E (71.6)	0.95	E (57.3)	0.82
SB	*Left*	E (76.6)	0.95	F (84.3)	0.98
	Left/Thru	E (73.7)	0.94	E (76.5)	0.95
	Right	A (1.6)	0.49	A (1.6)	0.43
	Intersection	D (47.5)	-	D (48.8)	-

Table 4: No Build Pedestrian and Bicyclist LOS

Approach	AM		PM	
	Pedestrian	Bicyclist	Pedestrian	Bicyclist
	LOS (Value)		**LOS (Value)**	
Commonwealth Avenue & Dale Street				
EB	C (3.1)	C (3.4)	C (3.1)	C (3.3)
WB	C (3.2)	C (3.3)	C (3.3)	C (3.4)
NB	C (3.3)	C (2.7)	C (3.3)	C (2.9)
SB	C (3.1)	C (3.0)	C (3.1)	C (2.9)
Commonwealth Avenue & North Magnolia Avenue				
EB	D (4.0)	C (3.1)	D (3.9)	C (3.1)
WB	B (2.2)	D (3.5)	B (2.1)	D (3.6)
NB	C (3.3)	D (3.9)	C (3.3)	D (4.1)
SB	C (3.4)	B (2.4)	C (3.4)	B (2.4)
Commonwealth Avenue & Gilbert Street				
EB	C (2.5)	C (3.4)	C (2.5)	C (3.5)
WB	C (3.4)	C (3.0)	C (3.4)	C (3.3)
NB	C (3.2)	C (2.5)	C (3.2)	B (2.4)
SB	C (3.2)	E (5.3)	C (3.2)	E (5.1)

Table 5: No Build/Build AM LOS

Approach / Lane		AM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Dale Street							
EB	*Left*	B (14.6)	0.34	B (18.7)	0.41	B (19.2)	0.42
	Thru/Right	A (9.7)	0.28	B (11.3)	0.31	B (11.5)	0.32
WB	*Left*	B (10.9)	0.12	B (12.9)	0.14	B (13.1)	0.15
	Thru/Right	A (8.9)	0.35	B (10.5)	0.39	B (10.8)	0.40
NB	*Left*	C (24.8)	0.25	C (25.0)	0.28	C (24.8)	0.28
	Thru/Right	B (19.9)	0.27	B (19.5)	0.28	B (19.5)	0.28
SB	*Left*	D (36.9)	0.69	D (38.4)	0.73	D (38.7)	0.73
	Thru/Right	C (24.3)	0.57	C (24.2)	0.58	C (24.0)	0.58
	Intersection	B (16.8)	-	B (17.9)	-	B (18.0)	-
Commonwealth Avenue & West Driveway							
EB	*Left*	A (8.9)	0.022	A (9.2)	0.009	A (9.2)	0.025
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (11.3)	0.037	B (13.1)	0.017	B (11.8)	0.04
	Intersection	B (11.3)	-	B (13.1)	-	B (11.8)	-
Commonwealth Avenue & South Edward Avenue							
EB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Left*	A (8.8)	0.016	A (8.9)	0.017	A (8.9)	0.017
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (12.6)	0.081	B (13.1)	0.093	B (13.1)	0.094
	Intersection	B (12.6)	-	B (13.1)	-	B (13.1)	-
Commonwealth Avenue & East Driveway							
EB	*Left*	A (9.0)	0.001	A (9.2)	0.009	A (9.3)	0.004
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (11.0)	0.043	B (10.7)	0.002	B (11.3)	0.01
	Intersection	B (11.0)	-	B (10.7)	-	B (11.3)	-
Commonwealth Avenue & Turner Avenue							
EB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Left*	A (9.6)	0.005	A (9.7)	0.005	A (9.8)	0.005
	Thru/Right	n/a	n/a	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (11.7)	0.009	B (12.0)	0.010	B (12.1)	0.010
	Intersection	B (11.7)	-	B (12.0)	-	B (12.1)	-

Table 5: No Build/Build AM LOS (Continued)

Approach / Lane		AM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & North Magnolia Avenue							
EB	*Left*	B (12.0)	0.01	B (12.0)	0.01	B (12.0)	0.01
	Thru/Right	C (29.4)	0.61	C (32.0)	0.67	C (32.7)	0.69
WB	*Left*	B (17.4)	0.70	C (21.7)	0.75	C (23.2)	0.76
	Thru/Right	B (13.0)	0.25	B (12.9)	0.27	B (13.0)	0.27
NB	*Left/Thru*	D (35.2)	0.56	D (37.5)	0.60	D (38.8)	0.63
	Right	A (5.3)	0.60	A (5.1)	0.61	A (5.0)	0.61
SB	*Left/Thru/Right*	A (0.0)	0.00	A (0.0)	0.00	A (0.0)	0.00
	Intersection	B (18.5)	-	C (20.02)	-	C (21.0)	-
Commonwealth Avenue & Gilbert Street							
EB	*Left*	E (61.7)	0.86	E (74.9)	0.94	E (75.4)	0.94
	Left/Thru/Right	D (50.7)	0.85	E (58.3)	0.92	E (60.4)	0.93
WB	*Left*	D (40.6)	0.17	D (40.9)	0.19	D (40.9)	0.19
	Thru	D (42.6)	0.40	D (43.1)	0.42	D (43.3)	0.44
	Right	B (19.2)	0.49	C (20.8)	0.54	C (20.8)	0.54
NB	*Left/Right/Thru*	E (61.9)	0.88	E (71.6)	0.95	E (71.6)	0.95
SB	*Left*	E (62.4)	0.86	E (76.6)	0.95	E (76.6)	0.95
	Left/Thru	E (60.6)	0.85	E (73.7)	0.94	E (73.7)	0.94
	Right	A (1.5)	0.46	A (1.6)	0.49	A (1.6)	0.49
	Intersection	D (40.8)	-	D (47.5)	-	D (47.9)	-

Table 6: No Build/Build PM LOS

Approach / Lane		PM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & Dale Street							
EB	*Left*	B (14.8)	0.42	C (20.4)	0.52	C (21.8)	0.54
	Thru/Right	A (7.8)	0.20	A (9.0)	0.22	A (9.3)	0.22
WB	*Left*	A (9.1)	0.09	B (10.5)	0.10	B (10.8)	0.10
	Thru/Right	A (7.7)	0.38	A (9.1)	0.42	A (9.5)	0.43
NB	*Left*	C (23.6)	0.21	C (23.1)	0.22	C (22.9)	0.22
	Thru/Right	C (24.1)	0.46	C (23.6)	0.47	C (23.4)	0.46
SB	*Left*	D (51.3)	0.78	E (55.6)	0.82	E (55.2)	0.82
	Thru/Right	C (20.9)	0.43	C (20.8)	0.44	C (20.6)	0.43
	Intersection	B (16.3)	-	B (17.6)	-	B (17.7)	-
Commonwealth Avenue & West Driveway							
EB	*Left*	A (9.9)	0.023	B (10.3)	0.005	B (10.3)	0.025
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
SB	*Left/Right*	B (12.7)	0.051	B (14.3)	0.030	B (13.7)	0.059
	Intersection	B (12.7)	-	B (14.3)	-	B (13.7)	-
Commonwealth Avenue & South Edward Avenue							
EB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Left*	A (8.7)	0.018	A (8.8)	0.021	A (8.8)	0.020
	Thru/Right	n/a	n/a	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (11.6)	0.032	B (11.8)	0.035	B (11.8)	0.035
	Intersection	B (11.6)	-	B (11.8)	-	B (11.8)	-
Commonwealth Avenue & East Driveway							
EB	*Left*	-	-	-	-	B (10.4)	0.003
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
SB	*Left//Right*	C (19.0)	0.119	C (16.8)	0.028	C (20.8)	0.129
	Intersection	C (19.0)	-	C (16.8)	-	C (20.8)	-
Commonwealth Avenue & Turner Avenue							
EB	*Thru/Right*	n/a	n/a	n/a	n/a	n/a	n/a
WB	*Left*	A (8.7)	0.005	A (8.8)	0.005	A (8.8)	0.005
	Thru	n/a	n/a	n/a	n/a	n/a	n/a
NB	*Left/Right*	B (13.0)	0.014	B (13.4)	0.014	B (13.6)	0.015
	Intersection	B (13.0)	-	B (13.4)	-	B (13.6)	-

Table 6: No Build/Build PM LOS (Continued)

Approach / Lane		PM					
		Existing Plus Project (2019)		No-Build (2022)		Build (2022)	
		LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio	LOS (Delay)	V/C Ratio
Commonwealth Avenue & North Magnolia Avenue							
EB	*Left*	B (11.5)	0.01	B (11.5)	0.01	B (12.0)	0.01
	Thru/Right	C (26.5)	0.49	C (28.7)	0.53	C (29.2)	0.56
WB	*Left*	B (14.6)	0.59	B (15.1)	0.63	B (15.3)	0.64
	Thru/Right	B (14.0)	0.32	B (14.3)	0.36	B (14.4)	0.37
NB	*Left/Thru*	C (34.0)	0.58	D (36.3)	0.62	D (37.6)	0.65
	Right	A (6.1)	0.66	A (5.7)	0.66	A (5.6)	0.66
SB	*Left/Thru/Right*	C (20.5)	0.01	C (21.3)	0.01	C (21.5)	0.01
	Intersection	B (16.8)	-	B (17.4)	-	B (17.8)	-
Commonwealth Avenue & Gilbert Street							
EB	*Left*	E (61.3)	0.87	E (70.4)	0.93	E (74.6)	0.95
	Left/Thru/Right	D (50.2)	0.86	E (58.8)	0.93	E (59.4)	0.94
WB	*Left*	D (42.4)	0.28	D (43.1)	0.31	D (43.1)	0.31
	Thru	D (50.3)	0.72	D (53.5)	0.78	D (54.4)	0.80
	Right	C (25.1)	0.67	C (28.5)	0.74	C (28.5)	0.74
NB	*Left/Right/Thru*	D (53.9)	0.77	E (57.3)	0.82	E (57.3)	0.82
SB	*Left*	E (65.8)	0.89	F (84.3)	0.98	F (84.3)	0.98
	Left/Thru	E (61.4)	0.86	E (76.5)	0.95	E (76.5)	0.95
	Right	A (1.3)	0.40	A (1.6)	0.43	A (1.7)	0.44
	Intersection	D (42.1)	-	D (48.8)	-	D (49.4)	-